No. [illegible] illustration (full size), made of [illegible] glass, fitted with [illegible] mouth-piece, [illegible]

Can be readily cleaned and sterilized with great convenience by [illegible] customary appliances at all [illegible]

[illegible] and price of this and other patterns on application.

DEARSON, CLARK & CO., LTD., Medical [illegible]

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ORIGINAL ARTICLES.

COMMENTS ON THE SLOW PROGRESS OF THE TUBERCULOSIS CAMPAIGN.

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Has "Sanatorium Treatment" and the "Dispensary System" of dealing with tuberculosis failed? This question or its purport is often raised at tuberculosis conferences and in the medical and lay press. We are told, for example, that our campaign against the disease has broken down badly; our diagnosis is too late; our notification and so our prevention is quite inadequate; our treatment is of small avail. We are neither preventing nor curing, and yet vast sums are being spent yearly on our efforts. This last statement is certainly correct. The outlook for a poor patient belonging to the working classes, in whose sputum tubercle bacilli have been demonstrated on at least two occasions, is declared to be well-nigh hopeless under the conditions that have prevailed in the past. These "conditions" refer principally to questions of housing, employment, and food which meet the patient when his sanatorium treatment has terminated and he returns to his home and family.

If these indictments be only partially true there is good cause for reconsidering the position. It is always easy to criticize, and for that reason it is a favourite employment of the idle. It is certainly difficult to devise a practical constructive policy. The writer, has, however, had the temerity in this article to offer some suggestions in this direction. The argument is based on the hypothesis that the arrested progress is largely due to our failure to avail ourselves of existing knowledge and of the methods that time has shown to be most efficacious.

The Problem of Tuberculosis.

In studying the problem of tuberculosis and how it is dealt with at home and abroad, it will be realized that there are two fundamental propositions that are of overwhelming importance, and are of such general acceptation that they may be regarded as axioms. Most of the associations that aim at securing the prevention of tuberculosis may be said to have materialized these views, although in totally different ways. These postulates can be stated as follows:

(1) That tuberculosis is not hereditary, but is generally contracted in early childhood from personal contact with an infecting agent. (2) That it is possible by prompt action not only to save the child from tuberculous infection, but even if it be infected to de-tubercularize it, provided that correct and prompt measures be taken before the occurrence of a gross tuberculous lesion.

The methods employed in different countries to carry out these principles may be divided into two distinct classes. The one holds that prophylaxis can best be accomplished by removing the child from the source of infection at the earliest possible age. This plan has been adopted very generally on the Continent, and has given rise to a word now in common use, namely, "dépistage."[1]

The second method is based on the view that the right course to pursue is: (1) To raise the child's resistance, and at the same time (2) to diminish and dilute the infecting dose until the child, although frequently infected, no longer suffers from the infection, but may even profit by it in so far that an immunity against the disease is in this way naturally acquired. All schemes that have this aim in view may be classed for purposes of description under the term "Immunization."

The Method of Dépistage.

The establishment *par excellence* that carries out all that is implied by "dépistage" is the Placement Familial des Tout-Petits of France, which is a further development of the idea engendered in the Œuvre Grancher.

Professor Calmette, speaking of the whole scheme embraced by these two organizations, said: "Amongst all the institutions for combating tuberculosis, which happily for our country continue to multiply around us (although still insufficient), there is not one which corresponds more exactly to an actual conception of the scientific prophylaxis of tuberculosis."

Dépistage, as practised by these two institutions, has been adopted

[1] From *dépister*, to throw . . . off the track ("French and English Dictionary," John Bellows); *dépister*, to discover the trace. The prefix indicates here not the action to greet, but to follow up ("Dictionnaire de la langue Française," E. Littré).

in Belgium, and is included in the work of the Belgian National League against Tuberculosis. At the time of writing 3,000 children have been so dealt with by their Œuvre Preservation de L'Enfance. In Switzerland there are two institutions, now famous, devoted to saving children at an early age from tuberculosis—the Preventorium de la Chapelle, and La Berallaz, situated in the Vaud Canton. These establishments are described as "realizing the fact that children ought to be taken from their homes even when in perfect health, for the sole reason of saving them from family infection." In Norway a special home was opened in 1922 for the reception of children from birth in danger of contracting tuberculosis, and is conducted on the lines of the Placement Familial des Tout-Petits of France. In Sweden the National Association against Tuberculosis aids all dispensaries in the country, now numbering 200, with half the cost of "placing" children who are living in contact with tuberculous parents, after the methods of the Œuvre Grancher. In America the guiding principles of action are the same as in the continental countries above-mentioned, but they are carried out in a different way. This is more particularly due to the fact that America is not hampered by the financial difficulties that cramp the efforts of all European countries, including our own, but, generally speaking, is in a position to adopt the absolutely best method regardless of expense. For this reason we see the apotheosis of the preventorium as the predominant instrument for the prophylaxis and early treatment of tuberculosis in early childhood. A bibliography received by the writer from Dr. Stephen Douglas, of New York, in 1928, named thirty articles of recent date by well-known authorities dealing with this question.

As regards this first division of the subject, it will be noted that the work of the above-mentioned two institutions have been accepted by all the leading authorities of France as being the best means of preventing tuberculosis. Centres have been established in Paris and branches initiated in many parts of France. These institutions, up to the end of 1925, had dealt with 2,500 children in Paris alone. They are employing methods that have been unhesitatingly adopted in Europe wherever the economic conditions allow. These methods are, however, not utilized at all in this country, or only in the case of the Œuvre Grancher, and that to a very limited extent.

If the question be raised in the Press or at public meetings as to why this is the case, the result is invariably the same. Arguments are advanced that are purely hypothetical which attempt to show that conditions are different in England from those which exist in all the world besides. These statements are neither founded on fact nor on the results of experience, which are in the end the only competent judges. We read that even in countries where the opposition has at

first been most determined, as in Switzerland, it has in every instance given way ultimately before patient and sympathetic effort.

Tuberculosis Village Settlements.

That immunization is possible is being demonstrated in this country in an experiment that is far past the experimental stage, and is indeed being carried out at its best in England. It is seen in our tuberculosis village settlements. At Papworth, in Cambridgeshire, up to the time of writing, 240 children have been born of tuberculous resident patients. Not one of these children has shown the slightest sign of suffering from tuberculous disease. From our other and more recent settlements equally good reports are being obtained. This result is unsurpassed and unsurpassable in this or any other country, and yet this method does not receive the general and wholehearted support that it merits.

Provision by Government of a sum sufficient for the establishment of a number of these tuberculosis settlements throughout the country was *the chief recommendation* of the Inter-Departmental Committee on Tuberculosis in 1919 (see p. 15, cl. 51 [iii]). This was not accepted by the Government of the day nor by subsequent Governments. The principal difficulty has undoubtedly been a financial one, but the reason assigned has been that "the scheme was in the experimental stage." So long as this objection could possibly, and with any plausibility, be used, it has been put forward.

If the work of these settlements has proved anything at all, it has shown that tuberculosis can be prevented; that immunity, and consequently life and health, can be secured if the nation will but be willing to pay the price.

This same principle is attempted by all schemes that have for their object the adaptation of the dwelling and surroundings to the tuberculous patient. It is exemplified in the Home Hospital Scheme of New York.[1] The final Annual Report of this organization states that "during the ten years of its trial no healthy person contracted tuberculosis." This experiment was started on the assumption that "It is now generally agreed that in the treatment of tuberculosis excellent results can be obtained in practically any section of the country (the word here implies the whole territory of the nation). This conclusion coincides with the experience in England. The goods of the Spero Workers are manufactured in the heart of London, and the 1926-27 Report of the Association states: "Speaking generally, the health of the workers has definitely improved."

The same experience is recorded by the very successful Altro

[1] See Millbank Memorial Fund Reports, 1923-1924, and "The Home Hospital," by Dr. A. Millar and J. C. Gebhart, published in the *American Review of Tuberculosis*, Vol. X., No. 6, February, 1925.

Workers, 1021, Jennings Street, New York. Many are stated "to greatly improve in health after they have been engaged for some time at this employment." Readers of this JOURNAL will be aware that nothing approaching the Home Hospital Scheme has been tried in England.

Another plan which may be brought under this category is seen in the allotment of suitable houses in healthy surroundings to tuberculous patients.

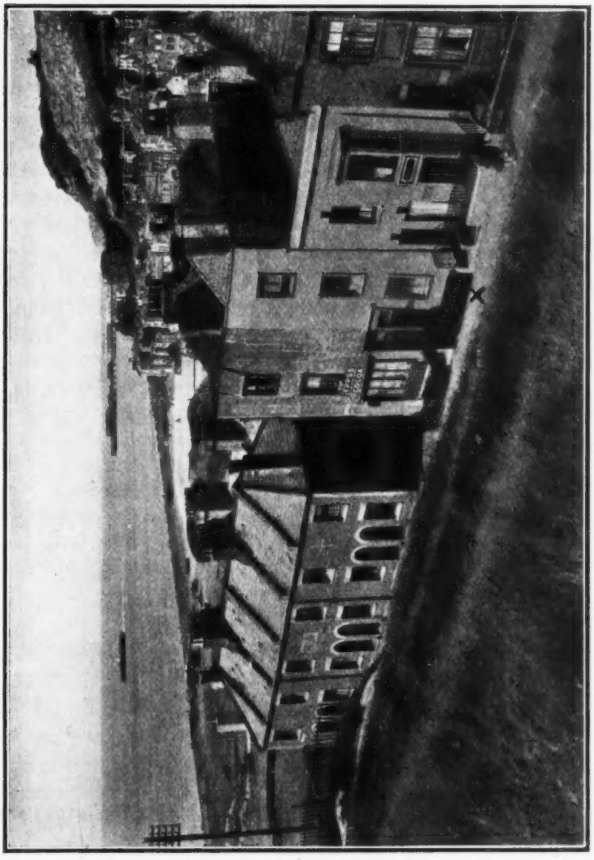
Of the flats in the garden cities around Oslo, Sweden, 10 per cent. have been placed at the disposal of the Swedish National Association for the Prevention of Tuberculosis. The families selected generally included some tuberculous patients able to work who had many children living with them. In England, in a few isolated instances, preference has been given to tuberculous patients for newly-built healthy corporation dwellings (if they can afford them). This has occurred notably at Sheffield. In the 1927 Annual Report of the Medical Officer of Health for that city appears the following: "During the current financial year the Hospital Sub-Committee have secured from the Estates Committee an allocation of twenty-six houses for the re-housing of infectious cases of tuberculosis." Selected patients on securing a tenancy sign an agreement so framed as to prevent the spread of the disease.

The Hastings Intensive Experiment.

An interesting experiment has been attempted at Hastings (see illustration). It is based on the assumption that one cannot build good houses, at all events in this locality, under the present conditions of labour and let them at an economic rent which is at the same time within the means of a large proportion of tuberculous patients. Such, however, can be accomplished by the process known as "reconditioning." Provided houses be carefully selected, even in poor industrial areas, these dwellings can be reconditioned in such a way that they are rendered thoroughly healthy and suitable for tuberculous patients whose disease has been arrested and who are able and willing to work. Such houses will yield 4½ to 5 per cent. on money invested after allowing a fair margin for repairs. Although dwellings in urban districts for tuberculous cases have not for the patient and the public as great advantages as the segregation provided at the tuberculosis settlements, they have some distinctive merits of their own. There are a certain number of these tuberculous people (we members of the Hastings Tuberculosis Care Committee often meet them) who will not give up their homes and leave their native town. They and their families greatly prefer to live in a community where they can have all the advantages, conveniences and amenities, social, religious, and educational, of a town

life, reside near their work, or on a spot where work is likely to be obtained.

In the Report of the Inter-Departmental Committee on Tuberculosis, 1919 (p. 7), it is recommended that "provision should be made for a certain proportion of the houses being specially planned so as to



A SEA-SIDE HOUSING EXPERIMENT.
No. 8, Tackleway, Hastings: Reconditioned for the reception of two tuberculosis families—
X indicates the house.

be suitable for occupation by a family of which one or more member are tuberculous." In the Parliamentary debate, July 19, 1919, following the reception of the Report, Sir Montague Barlow emphasized this in the strongest terms. It may be assumed that all would agree to this. It is accepted as a fact that it is futile for patients to return after sanatorium treatment to the unhealthy houses in which they con-

tracted the disease, and yet attempts in England to alter these hopeless conditions, which Mr. Wheatley, when Minister of Health, said "strike at the root of tuberculosis," can only be described as in embryo.

Rôle of the Laity in the Campaign against Tuberculosis.

There is one more factor that must be considered in our argument. It was said recently and with truth by Sir Josiah Stamp that "No modern schemes are practicable without the moral factor." This is peculiarly applicable in the case of tuberculosis. In studying the problem one cannot help being impressed by the invaluable part played everywhere by the social worker in dealing with "the family unit." Contacts have to be induced to present themselves for examination, alterations suggested in the management of the household, or a dangerous advanced case urged to leave his home. All this cannot be done with the voice of officialdom; it can only be accomplished in a spirit of sympathy, tact, and kindness.

Dr. Rist, in speaking of the voluntary social workers at the Sixth Annual Meeting of these Societies in France, to which I have referred, said: "It is difficult to see how the work of the Œuvre Grancher and Placement Familial des Tout Petits could go on without them." But the efforts of the social workers in this country culminate and find their chief expression in a special organization—namely, the

Tuberculosis Care and After-Care Committee.

Most of the indirect causes that produce tuberculosis amongst the poor are in the nature of social evils, such as bad housing, overcrowding, unemployment, and the like. These are problems that can but be attacked by the laity and by the Tuberculosis Care Committees representing them. They are the only Committees that exist that can deal adequately with the social aspects of the tuberculosis problem. A Tuberculosis Care Committee is an integral part of the legal provision made for the relief of tuberculosis and should include in its membership representatives of all communal interests. It may be suggested that the next step should be for these bodies to organize. Their powers would be enormously increased by co-operation with a Central Committee in London, and they should also keep in constant touch with the Ministry of Health at Whitehall. They could then pool their ideas, support each other, watch legislation, and try and influence it in the right direction. It is for them to acquaint legislators with the facts of their case and to show them where and how help is required. A greater appeal should be made to the laity, not in this instance for financial help, but for the help that most people, on account of the particular training of their lives, have to offer if they will.

However much misanthropes may doubt it, there are vast numbers

of men and women willing and anxious to render social service if they can be but shown the way, and provided they are assured that the cause is good and is likely to lead to the saving of life or the conferring of a more abundant life on the community. The views briefly expressed in this article have been elaborated and the methods, schemes, and associations to which allusion has been made have been described in detail, with full references, in a book just published by the author and entitled "Some Methods for the Prevention of Tuberculosis," issued by the publishers of this JOURNAL.

THE RÔLE OF CALCIUM IN THE PREVENTION AND TREATMENT OF TUBERCULOSIS.

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THE recent illness of the King has stimulated renewed interest in the various mechanisms put into operation by the human body in its resistance to infection, as well as in the therapeutic measures whereby the effects of these mechanisms may be enhanced.

Physiological Equilibrium of the Body: The Mineral Salts.

Modern conceptions of health and disease are based upon the chemical changes that take place in the cells and tissues. Ideal health may be said to consist in perfect biochemical balance. Such physiological equilibrium is largely maintained by the mineral elements of the organism, although of late their importance has to some extent been overshadowed by the striking discoveries which have been made in the realm of hormones and vitamins, and in the therapeutic potentialities of radium and ultra-violet radiation. For any valuation of vital processes to be comprehensive, it is, therefore, essential to take into account the whole triad of hormones, vitamins and mineral salts.

In prophylaxis as in resistance against infection, the inorganic constituents of the body cells and tissues, including in the latter the blood, play an important part. Of these constituents sodium, potassium, calcium, and magnesium are the chief. They fall naturally into two pairs, in each of which one element tends to balance the other. The univalent sodium-potassium pair is usually associated with alkalinity of the blood plasma and secretions, so differing in action from the

bivalent calcium-magnesium pair in which the acid base balance is deviated in the direction of acidity. In the cell the first group induces heightened permeability of cell wall and conductivity with liquefaction or dispersion of colloid substances, whilst the second causes decreased permeability and conductivity with coagulation or aggregation of colloids. Further, $\frac{Na}{K}$ increase sympathetic activity, whereas $\frac{Ca}{Mg}$ increase vagal activity.

The Rôle of Calcium.

A. Occurrence of Calcium in the Body.—The presence of calcium in sufficient amount is necessary for effective maintenance of vital processes, and, when the blood content falls appreciably below the standard figure of 10 mg. per 100 c.c. blood serum, serious dysfunction inevitably follows. In the tissue fluids calcium exists to the extent of about 0·0105 per cent.

Proportionately to the quantity of available free hydrochloric acid in the stomach, calcium ingested is split into (1) an ionizable form, capable of absorption; (2) an insoluble form, which is saponified in the small intestine and finally excreted in the fæces, this portion representing a total loss to the organism.

The portion which is absorbed into the blood becomes further split into (*a*) a "free" ionic form, utilizable by the tissues during its passage along the blood stream; (*b*) a "bound" form, non-ionizable and combined with protein, available for blood coagulation. With excessive tissue-acidity this chemical action becomes reversible; (*a*) and (*b*) together constitute nearly the total blood calcium content. The calcium excreted by the kidney may possibly represent the overflow of protein-bound calcium alone, since calcium salts taken by mouth fail to increase the amount excreted in the urine.

The present state of our knowledge of calcium metabolism cannot, however, be regarded as by any means final, and in the past much confusion has been imported into this admittedly difficult problem by those who have contented themselves with expressions of opinion as to the rôle of calcium in the body founded solely on blood or urinary estimations. To gain any clear idea of calcium metabolism it is first essential to assess by as exact methods as are yet forthcoming the calcium content of the urine and fæces as well as of the blood. Such large quantities of calcium may be voided by the intestinal route as entirely to vitiate conceptions based on a more limited method of investigation.

B. Intake of Calcium.—In an ordinary mixed diet calcium is the mineral element most likely to be ingested in insufficient amount. For prophylaxis the diet of every adult should contain 0·8 gramme of calcium per day; the diet of an ordinary individual should contain

about 0·5 gramme. For treatment, in view of extra needs of the organism for calcium, the daily intake should not be less than 1·0 gramme. The above quantities are necessary owing to an average daily loss of 0·3 gramme by the urine, and 0·5 gramme by the fæces, making a total excretion of 0·8 gramme.

The articles of diet richest in calcium are: (1) Milk, 0·12 per cent. (0·72 gramme in a pint); (2) cheese, 0·93 per cent. (half-ounce cheese contains 0·14 gramme of calcium).

During the early months of life milk forms the sole source of calcium supply. It is present therein as (*a*) ionized calcium phosphate, and (*b*) combined with protein as calcium caseinate which, during digestion, is converted into the ionized and diffusible chloride.

Considerable quantities of calcium exist in certain natural springs. In this country we are fortunate in the rediscovery in a restful and beautiful part of Lincolnshire of Braceborough Spa, whose records go back to the early days of the nineteenth century, when the healing properties of its waters were well recognized by the medical faculty, one of whose members, Dr. Francis Willis, physician to George III., made considerable use of them, and was succeeded in residence at Braceborough House by his son, Dr. John Willis, and various other descendants until 1927. Braceborough Spa water possesses qualities similar to those of Bad Wildungen. It is palatable and refreshing, containing approximately 30 grains per gallon of active calcium bicarbonate held in solution by free carbon dioxide gas, large bubbles of which can be seen rising continually at the source. This fact accounts not only for its high calcium content, but for its ready absorption and retention. The output of the spring amounts to several thousand gallons a day at an equable temperature of 50° F. summer and winter.

C. Absorption of Calcium.—The commonest cause for an insufficiency of lime for individual needs is inadequate absorption rather than inadequate intake, as is proved by (*a*) analyses of the fæces before and after oral administration, the totality of additional calcium being recoverable; also (*b*) the tendency of urinary calcium excretion to be constant for the individual, fæcal excretion increasing or decreasing in accordance with intake. It is probable that adequate absorption never takes place in the absence of a sufficiency of vitamin D, contained in cod-liver oil, or produced by the action of ultra-violet rays, either from the sun or from an artificial source, upon minute quantities of ergosterol present in the skin. Hence, in administration of calcium, one or other of these activators of calcium metabolism should simultaneously be employed. A convenient and active substance is found in irradiated ergosterol (radiostol), which can be given in various forms by mouth.

Individuals vary within wide limits, some probably storing up a sufficiency of vitamin D during the winter, but in this country, which

lacks bright sunlight for many successive months, the majority feel the need of ultra-violet rays or oral vitamin D.

D. Retention of Calcium.—The vital issue hangs not so much upon the amount of calcium daily ingested, or even upon how much of this is absorbed, as it does upon the amount of calcium that is *retained* in the tissues, so as to be available for bone building, blood coagulation, resistance to infection, and other somatic requirements. In other words, effective calcium therapy is intimately allied with adequate calcium retention. This is dependent upon internal secretions and the acid base balance of the body. Irrespective of vitamin D, excessive calcium is eliminated if the acid base balance is deviated much either to the alkaline or to the acid side. By correcting this deviation, normal retention is ensured. Hence the importance, especially for growing children, of a properly adjusted dietary. An inadequately balanced protein intake favours tissue acidity. Thus it becomes necessary to add to the diet a sufficiency of vitamin-producing fats and carbohydrates, particularly potatoes, fresh fruits and green vegetables, by which the requisite sodium, potassium, and organic acids are provided. Within the body the conversion of organic acids to carbonates serves to counteract the tendency to deviation of the acid base balance to the side of acidity.

Further, too, balance between the glands of anabolism and katabolism is essential. Augmented activity of the katabolites, especially of the thyroid gland and suprarenal medulla, causes increased excretion, the mechanism being partly direct and partly indirect as a result of increased acid katabolite formation through acceleration of metabolism. Augmented activity of the thymus gland, the anterior portion of the pituitary (probably also the pineal), the islets of Langerhans in the pancreas, and the suprarenal cortex, all favour calcium retention, in part directly, as occurs normally during growth in the case of the first two glands, and in part indirectly by checking abnormal acceleration of metabolism.

E. Regulation of Calcium.—The parathyroids also fall within the anabolic group, but probably have a particular and specific action on calcium metabolism, their main function being that of regulators.[1] Considerably more research on human subjects is needed before this can dogmatically be asserted, but, so far as our present knowledge extends, it is reasonable to believe that the parathyroid hormone favours either retention when there is insufficient calcium in the body, or excretion in the case of excess, the parathyroid mobilizing calcium reserves in a form utilizable for immediate needs.

F. Calcium Therapy.—For upwards of a century "recalcification"

[1] Vines, H. W. L.: "The Parathyroid Gland in Relation to Disease." London: Arnold, 1924.

Ellman, P.: "Co-relation of Calcium Metabolism, Parathyroid Function and Pulmonary Tuberculosis." Metrop. Asylums Board Ann. Report, 1926-27, 331.

methods in the treatment of tuberculosis have been warmly advocated by the French school of medicine, Ferrier, Robin and Sergent especially having devoted much attention to this subject. Nevertheless, on this side of the Channel, repetition of their procedures has led to disappointment by reason of the inconclusive results attained. This lack of success is mainly due to improper selection of cases, and possibly the comparative lack of sunlight may also have some influence. At the same time, those who have practised calcium therapy for some years in tuberculosis have been able to record certain notable successes.

Recent researches have, however, afforded us a clue to the guiding principles in selection of cases which are likely to benefit from the administration of calcium alone, or in combination with parathyroid, and Dr. Edgar Obermer's[1] division of pulmonary tuberculosis into "hard lung" and "soft lung" types has rendered considerable help in solving the problem. The fibro-calcareous "hard lung" type tends to run a very chronic course, the symptoms being due to a pure tuberculous toxæmia. Such cases manifest low pyrexia, apart from a terminal hyperpyrexia, relatively high arterial pressure, infrequent excavation, hæmoptysis and laryngeal complications. The exudative "soft lung" type on the contrary exemplifies a mixed infection toxæmia of relatively acute form with rapid progress and severe constitutional disturbance, associated with *opposite* symptoms to those of the first group. Biochemically the first group connotes a normal or deficient calcium urinary and fæcal excretion; the latter a calcium excess excretion. The glands of internal and external secretion show correspondingly opposite pictures, although, taking each type as a whole, it must be remembered that the line of demarcation in certain cases tends to overlap. The blood calcium content in both groups tends to be high. The practical point that emerges from the above is that fibro-calcareous cases do not need control or treatment by calcium unless their resistance becomes impaired, and then benefit by the exhibition of calcium alone. The exudative cases badly need calcium in combination with parathyroid and vitamin D.

In my experience the most useful forms of calcium for administration are tricalcine, a mixture of calcium carbonate and tribasic calcium orthophosphate with 2 per cent. of magnesium phosphates in 1·0 gramme tablets, powder, or cachets orally thrice daily with meals; calcium gluconate, one teaspoonful of the powder by mouth thrice daily one hour after meals, or by the intramuscular or intravenous route (rapid) one 10 c.c. every two to three days, more often in the case of severe hæmorrhage, when larger doses still may be given with safety; a double salt of calcium and sodium lactate (kalzana), two to six tablets

[1] Obermer, E.: "The Endocrinology of Tuberculosis," *Proc. Roy. Soc. Med.* (Comparative Med. Section), 1928, XXI., No. 3, 329. "Defensive Mechanism in Tuberculosis from the Physical and Chemical Aspects," *Tubercle*, June, 1927.

daily, each of which contains 0·05 gramme calcium ; or colloidal calcium thrice daily by mouth in combination, if desired, with hypodermic injections of 0·5 c.c. which are apt to cause a variable amount of local and general reaction on the following day. With these preparations more uniform results are usually obtainable than with the lactate alone. A useful method of giving calcium chloride is in 10-grain doses in a mixture combined with 10-minim doses of dilute phosphoric acid. Ten grains of calcium chloride contains 0·25 gramme calcium ; 10 grains calcium hypophosphite contains 0·256 gramme calcium.

Parathyroid Therapy.—Of the preparations available for parenteral administration, parathormone in my experience is the only active one. The potency of most oral preparations is doubtful. Owing to errors in manufacture many are inert. Palatinoids of $\frac{1}{50}$ grain have been found after careful testing to yield apparently good results.

COD-LIVER OIL IN THE TREATMENT OF TUBERCULOSIS.

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AND

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Historical.

Apparently the first recorded use of cod-liver oil was at the Manchester Royal Infirmary in 1789 by Darbey, who prescribed it for the treatment of excruciating rheumatism. Long before this, its virtues were known to fishermen along the coast of Northern Europe, in the Shetland Islands, and in the north of Scotland, where it had long been considered a special delicacy given to people in poor health. In Holland and in Germany several reports of its use for the treatment of rheumatism and gout appeared during the first quarter of the nineteenth century, and in 1824 Schutte published the first definite account of cases of rickets cured by the oil, stating that he had used it for twenty-five years. At first it was used in chronic rheumatism and gout, then in other bone and joint diseases, notably rickets and osteomalacia (which was considered closely allied to gout), then in scrofula because of its supposed identity with rickets, and finally in various forms of tuberculosis.[1]

The Value of Cod-Liver Oil in Tuberculosis.

For nearly a century cod-liver oil has been prescribed for tuberculosis and almost all other diseases associated with wasting and malnutrition. The literature abounds with references to its value in these conditions. For instance, as far back as 1879, Bennett[2] wrote: "Cod-liver oil stands highest in the professional mind in the treatment of tuberculosis," and in 1905 Turban[3] said: "When a lesion of the lung has been demonstrated no time should be lost in administering remedies such as cod-liver oil and the like." In fact, almost all writers on the subject during the past fifty or sixty years have called attention to the beneficial effects of the oil as a medicament.

The therapeutic use of cod-liver oil has been in advance of any definite knowledge of the nature of the active constituents, for it is only within the last decade that there has been any well-substantiated information available regarding the factors to which its therapeutic value is due.

Theories regarding the Action of Cod-Liver Oil.

A number of theories have been advanced to explain the action of cod-liver oil in tuberculosis. Some of these regard it as a food, and attribute its value to the high percentage of unsaturated fatty acids. It is extremely probable that one function of the liver is the preparation of unsaturated fatty acids which are more easily utilized than the saturated compounds for the further processes of metabolism; cod-liver oil, which contains a high percentage of unsaturated fatty acids, might be expected to have some action on metabolism different from that of other fats. Williams[4] has shown that the administration of this oil increases not only the total absorption of fats but also the percentage absorption of all fats taken, and further that it influences the retention of nitrogen favourably. Wells[5] claimed that whereas only 14 per cent. of fat in the form of glycerides of saturated fatty acids is absorbed from the intestinal tract, as much as 98 per cent. of unsaturated fats is absorbed.

According to McCann[6] the administration of fat causes less respiratory ventilation than the amount of carbohydrate necessary to produce an equivalent quantum of heat and energy. Since cod-liver oil promotes the absorption of fat, it ought to be of value in active pulmonary tuberculosis where it is desired to limit respiratory ventilation. It is generally agreed that under-nutrition, particularly in respect of fats, greatly favours the development of tuberculosis. According to Vaile,[7] persons who eat fat rarely suffer from tuberculosis; a similar observation is made by Gittings, Lathrop, and Anderson,[8] who ascribe the value of cod-liver oil to the fact that it is tolerated better than cream by children with poor appetites.

Experiments have shown that cod-liver oil (*in vitro*) dissolves the

fatty envelope which surrounds the tubercle bacilli and retards the growth of the organism.[9] This has led to the suggestion that when the fatty acids of the oil reach the tissues they have a direct influence on the tubercle bacillus. This view is supported by the experiments of Campbell and Kieffer,[10] who found that after contact with cod-liver oil tubercle bacilli were unable to grow and did not produce tuberculosis, whereas after contact with cotton-seed oil for six weeks the organisms had not lost their power of growth and were still able to produce the disease.

Vitamins and Infection.

During the last two decades the recognition of the importance to the animal organism of an adequate supply of vitamins has directed attention to the possible rôle of vitamin deficiency as a factor predisposing to many infections. Since cod-liver oil is known to be a particularly potent source of the fat-soluble vitamins A and D, it becomes of interest to enquire how much evidence can be advanced to show a relationship between this vitamin content and the value of the oil in tuberculosis.

The Rôle of Vitamin A.

That animals fed on diets which, although well balanced in respect of carbohydrates, proteins, and fats, are deficient in fat-soluble vitamin A, are very susceptible to lung infection, has been reported by a number of workers. For example, a lowering of resistance in adult rats to infection, manifesting itself sometimes as an inflammatory condition of the lungs, was pointed out by Drummond,[11] and similar observations were made by Cramer and Kingsbury[12] and by Mori.[13] Mellanby[14] advanced evidence to show that some animals deprived of fat-soluble vitamin developed broncho-pneumonia, and others exhibited at *post-mortem* examination local collapse along the margins of the upper lobes of the lungs. This condition was often associated with patches of emphysema in other parts of the lungs. On the basis of these results Mellanby advanced the suggestion that the so-called "catarrhal child" is a product of defective feeding of the mother during pregnancy and lactation.

More recently Green and Mellanby[15] reported a series of investigations which led them to the conclusion that vitamin A plays a significant part in raising the body resistance to infection, and on this account suggested the name "anti-infective" for this vitamin, as most appropriate to designate its significance for the animal organism.

Smith and Hendrichs[16] described experiments on albino rats indicating that tubercle-infected rats deteriorate more rapidly than non-infected controls when maintained on a diet low in fat-soluble vitamins. A liberal allowance of fat-soluble A appears to afford protection against early deterioration. It was found that animals deprived of this

vitamin and infected with tuberculosis were rendered susceptible to tuberculin shock, from which it was concluded that vitamin deficiency lowers the resistance of the animal to tubercle infection. Happ and Wagner[17] found that a fat-free diet favoured the development of tuberculosis, whilst the addition of cream hindered it. They ascribe this action to the influence of the fat-soluble vitamin According to Hattori and Matsuura[18] of the Nagoya Sanatorium, vitamin A is one of the most favourable remedies for use in tuberculosis. Sherman and Burtis[19] showed that a relatively mild deficiency of the fat-soluble vitamin A in infancy predisposes to infection in later life.

The Rôle of Vitamin D.

One of the most important advances in the study of the fat-soluble vitamins was the differentiation in 1922 of the fat-soluble A, or growth-promoting factor, from the fat-soluble D, or anti-rachitic factor, which previously were regarded as one and the same vitamin. It is the growth-promoting (or anti-ophthalmic) vitamin A to which Mellanby applies the name "anti-infective vitamin."

The most characteristic evidence of vitamin D deficiency is seen in rickets, a disease which can be prevented, or, when present, cured, by the administration of vitamin D. The discovery that this vitamin is synthesized by the action of ultra-violet light on ergosterol has indicated that the value of sunlight in rickets is due to its ability to synthesize this vitamin from ergosterol in the skin of the patient, and suggests a possible mechanism by which the value of sunlight in other conditions is brought about. As pointed out in the report of the Medical Research Council for the year 1927-28, there is no reason to suppose that the supply of vitamin D can be better effected by exposing the body to ultra-violet rays from an artificial source than by the provision of the necessary food value. On the contrary, the use of artificial lamps to supply what can more easily be obtained in a medicinal dose of cod-liver oil has no superiority to justify the additional expense involved.

It has been shown by Grant, Suyenaga, and Stegeman[20] that rats fed on a diet deficient in calcium and vitamin D can be made susceptible to tuberculosis, whereas control rats fed on adequate diets are immune to subcutaneous inoculation with tubercle bacilli even in large doses.

According to Cramer[21] there is evidence to indicate that the blood platelets are a mechanism of defence against certain types of bacterial infection. The two remedies that are most useful in tuberculosis, cod-liver oil and light, both increase the number of blood platelets.

Eicholtz and Kreitmar[22] have shown that an obvious lowering of resistance to infection occurs in rats and mice following a diet deficient in vitamin D, and Pfannenstiel[23] recorded that the bactericidal power

of blood is increased following the administration of small doses of vitamin D.

Calcium Metabolism and Tuberculosis.

The relationship of calcium metabolism to tubercle infection has been the subject of numerous publications, many of which call attention to the formation of calcified tubercles as part of the healing process. Ellman[24] considers that, since calcified tubercles are usually either latent or sterile healed tubercles, the possibility of stimulating calcification of tuberculous lesions with the idea that healing would thus be accomplished would appear to be very rational. He refers to the work of Sergent,[25] who states that the recalcification method is the best means for combating tuberculosis, but emphasizes that it must not be looked upon as affording a promise of cure in every instance, although curative treatment must have as its principal aim the recalcification of the decalcified organism.

The researches of Ferrier,[26] to whom is attributed the introduction of the decalcification theory in tuberculosis, led him to believe that pulmonary lesions undergo calcification at the same time as teeth and bones, and not infrequently he noted tubercle starting with dental caries. Lee Pattison[27] has examined the calcium content of the saliva of tuberculous children and has reached the conclusion that lowered resistance to tubercle infection is associated with a low calcium content of the saliva, and similar conclusions were reached by Broderick.[28] Lee Pattison[29] has further shown that the calcium content of saliva can be raised by the administration of cod-liver oil or other source of vitamin D.

From the examination of seventy cases of pulmonary tuberculosis Brockbank[30] found the serum calcium value to vary between 8·6 and 12 mgrms. per 100 c.c., the normal value being 10 mgrms. per 100 c.c. of serum. It was observed that on the average the calcium was decreased in quantity in the serum when the disease was acute and that it was increased when the disease had healed, with proportionate results in the intermediate stages. The serum calcium was not diminished in patients who are coughing up blood as compared with patients in a similar state of the disease but without that symptom. It was found that calcium given intravenously raised the serum calcium above the normal for forty-eight hours.

Ellman advances evidence to show that the calcium content of the blood in pulmonary tuberculosis is within normal limits, but that this can be raised from the minimum to the maximum with corresponding improvement in the patient's general condition by calcium or parathyroid therapy.

In contrast to those who support the demineralization theory there are a number of contributions in the literature which are apparently

opposed to the views of the French school. For instance, Ferretti,[31] after examining eight cases of tuberculosis, claimed that there is no inevitable decalcification in the course of the disease. A similar conclusion was reached by Greisheimer and Van Winkle,[32] who reported that they were unable to detect any marked increase in the amount of plasma calcium after treatment with cod-liver oil or exposure to artificial sunlight lamps. In this connection it may be noted that in clinical or experimental rickets, unaccompanied by tetany, there is usually no marked deficiency of calcium in the blood although there is a very definite deficiency in the bone. Similarly, although favourable effects on certain signs and symptoms in tuberculosis were attributed by Gordon, Roark, and Lewis[33] to the injection of the parathyroid hormone which promotes the utilization of calcium, they state that there is no evidence to suggest this effect necessitates an increased amount of this element in the circulating blood.

There is abundant evidence to show the value of cod-liver oil or of vitamin D in the treatment of clinical or experimental rickets. Moreover, evidence is not wanting to show that cod-liver oil promotes calcium metabolism in the non-rachitic animal. Hart, Steenbock, Kletzier, and Scott[34] concluded, as a result of experiments, that calcium metabolism in lactating animals is considerably improved by the administration of cod-liver oil provided the animals are first accustomed to this material, so that there is no loss of appetite during the test period. As already indicated, this effect of cod-liver oil in promoting the utilization of calcium must be ascribed to the presence of vitamin D. It is now believed that the effect of vitamin D is initially to produce an increased acidity within the lumen of the intestinal tract, especially the cæcum and large intestine, whereby the absorption of calcium and of phosphorus is promoted. In the case of rachitic animals deprived of vitamin D, the fæces have an alkaline reaction, but following doses of vitamin D (or of cod-liver oil) this reaction is changed to acid,[35] and the acidity has been demonstrated within the cæcum and large intestine.[36]

The value of cod-liver oil in tuberculosis may therefore be correlated with its potency in respect of the two fat-soluble vitamins, the one serving to increase resistance to infection and the other serving to promote calcium metabolism. Kerschner,[37] in 1926, suggested that there are at least three good reasons for increasing the calcium content of the body in tuberculosis: (1) To overcome the demineralization which the French writers have demonstrated and thus to restore the normal calcium balance, a condition very essential to health; (2) to secure the deposition of calcium in tuberculous foci in order to promote healing by mechanically inducing fibrosis and also calcification of the lesion; (3) to stimulate phagocytosis.

Weston Price,[38] who has studied the means which may be employed to increase the assimilation of salts by the body, considers that in order to raise the calcium reserve, it is necessary to administer calcium lactate together with an "activating substance" such as cod-liver oil which will enable the calcium to be utilized.

In order to obtain the maximum effect from cod-liver oil for promoting calcification in tuberculosis, it is obviously necessary to provide an adequate amount of calcium salts either by regulation of the diet or by supplementary medication.

Preparation and Assay of Cod-Liver Oil.

Cod-liver oil is extracted from the fresh liver of the cod (*Gadus Morrhua* and other species of *Gadus*), which are found in shoals, during particular seasons of the year, off the coast of Norway, Newfoundland, the north of Scotland, Japan, Siberia, and the east and west coasts of America. The quality of the oil is greatly affected by the promptitude with which the livers are extracted, any decomposition of the livers having a detrimental effect on the flavour, odour, and vitamin content. It is therefore important that the extraction of the oil should be made with as little delay as possible, and under conditions that reduce to a minimum the detrimental effects of atmospheric oxidation, which is known to destroy vitamin A. The refined medicinal oil obtained under modern conditions is of a transparent yellow colour, free from rancidity and of high vitamin potency.

The amount of fat-soluble vitamins shows considerable variation between different samples of the oil. Consequently it is customary to ascertain the vitamin titre by physiological tests, in which the oil is fed to rats showing definite manifestations of vitamin deficiency; each of the two factors A and D must be assayed separately, since the curative effects of the one do not influence the lesions resulting from a deficiency of the other, and, as the work of Clare and Soames[39] has shown, there is no parallel between the relative amount of vitamin A and vitamin D present in different samples.

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VERNES' PHOTOMETRIC TEST IN THE DIAGNOSIS AND PROGNOSIS OF TUBERCULOSIS.

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IN a recent number of this Journal[1] Dr. Arthur Vernes briefly describes his test for the diagnosis of tuberculosis by serum flocculation. The principle of the test consists in the measurement of the degree of the flocculation of blood sera to which an equal proportion of 1·25 per cent. resorcin in doubly distilled water has been added, the reading being taken in the photometer of Vernes-Bricq-Yvon. The result is given by the difference between the readings taken immediately on the admixture and after an interval of four hours. As the result of his researches, Vernes found that a figure of 30 and over signified that the serum came from a person suffering from active tuberculosis, a reading below 15 signified the absence of active tuberculosis, while readings between 15 and 30 were in the doubtful area, being the more suspicious the nearer they approached 30. His work on tuberculous sera followed

[1] See BRITISH JOURNAL OF TUBERCULOSIS, October, 1928.

his researches on syphilitic sera flocculated by the addition of perethynol, the method now adopted in the French laboratories as well as in those of many other countries. Unlike the Wassermann test, the personal element is totally eliminated, while Vernes' method also gives prognostic help, in that an exact figure is obtained, which is greater or smaller at different periods of the disease, according as the condition retrogresses or improves.[1]

Vernes' method was introduced to London in 1927 by Dr. Ofenheim, working at St. John's Hospital, Lewisham; he there set up the necessary apparatus for the investigation of syphilitic and tuberculous sera by the photometric method, and is himself very enthusiastic as to the value of his results. In November, 1927, Dr. Ofenheim asked me to co-operate in the work by sending dispensary patients to him for blood tests. Between November, 1927, and June, 1928, the blood sera of 92 patients was thus investigated, and the results have been classified in four groups as follows:

Classification of Cases.

Group I. Definite Pulmonary Tuberculosis with T.B. + (50 Cases).—Highest O.D., 222; lowest O.D., 8—average, 59. Optic density 30 and over in 35 cases; under 30 in 15 cases. Of those below 30, 7 cases were between 15 and 30; 8 cases were below 15. Looking further into the 15 cases with an O.D. below 30, we find that in 8 the disease was quiescent, and in 4 it was chronic in character. Of the remaining 3, in which the disease was still active, 1 was fairly chronic (O.D. 25), 1 had just returned from sanatorium (O.D. 20), while the third is a puzzle. This was a woman aged 32, who had been in intimate contact with two relatives dying from tuberculosis. She had a slight hæmoptysis and presented herself for examination. Very slight physical signs were detected at the left apex, the sputum was negative, and the O.D. 12. Against my principles I allowed clinical evidence to be outweighed by laboratory findings, but in this case the pathological diagnosis was not justified. For a few weeks later there was further slight hæmorrhage, and this time T.B. were found in the sputum, and an X-ray examination showed infiltration at the left apex. But of the 50 cases in the first group, this is the only one which gives a badly faulty result. Perhaps it signifies that the patient's resistance

[1] The following bibliographical references will be of service to those who desire to take up the Vernes test:

VERNES: Travaux et Publications de l'Institut Prophylactique—Fascicule 2: "L'Organisation de la Syphilimétrie"; Fascicule 4: "Études sur la Sérologie de la Tuberculose."

BRETON: "Étude de la Réaction de Vernes à la Résorcine dans la Diagnostic et le Pronostic des Tuberculoses."

OFENHEIM: *Journal of Clinical Research*, vol. xiv., No. 1, January, 1928.

against the disease is exceptionally strong. Certainly she has made an excellent recovery at a sanatorium.

Group II. Definite Pulmonary Tuberculosis, T.B. – (11 *Cases*).—Highest O.D., 98; lowest, 8—average, 55. In 9 cases the O.D. was over 30; in 2 cases below 30. Of the 2 below 30, one was a very chronic case (O.D. 21), the other gave a history of hæmoptysis in 1923 and of removal of a tuberculous kidney in 1924; she now showed physical signs at the right apex (O.D. 8).

Group III. Suspects, all with Negative Sputum (17 *Cases*).—O.D., 30 and above in 2, 15 to 30 in 6, below 15 in 9. This is the most unsatisfactory group, as it is the one in which help in clinical diagnosis is most required, whereas the results still leave one in doubt. The 9 cases with O.D. below 15 should, according to the principles of the test, be non-tuberculous, but clinically they cannot be discharged with a clean bill; 6 of them had coughed up blood, 2 others showed suspicious clinical and radiological signs at the right apex, and the ninth had a prolonged febrile attack, with night sweats and suspicious signs at the right apex. The 2 cases with O.D. of 30 and 55 are most probably suffering from pulmonary tuberculosis. Of the 6 cases with O.D. between 15 and 30, 4 had coughed up blood (O.D. 29, 25, 18, 18), 1 had a positive X-ray (O.D. 19), and the sixth had a cloudy serum which vitiated the test.

Group IV. No Clinical Evidence of Tuberculosis (14 *Cases*).—O.D., above 30 in 2, 15 to 30 in 3, below 15 in 9. The 9 cases with O.D. below 15 had all come to the dispensary either as contacts of tuberculous cases or on account of slight symptoms. I am satisfied that the Vernes test gives an accurate result in these cases. Of the 3 cases with O.D. between 15 and 30, 1 (O.D. 16) showed no physical signs, but gave a positive X-ray picture, and made an excellent recovery at sanatorium; 1 (O.D. 19) came on account of streaked sputum and because there was tuberculosis in the family; the third (O.D. 16) gave a history of pleural effusion in 1924. The 2 cases which gave a positive test are: (i.) O.D. 58. A boy, aged 25, who had lost his sister from P.T. in 1927 and was worried because he was losing weight. Repeated physical examination showed no abnormal signs in the lungs; sputum and X-ray were negative. (ii.) O.D. 91. A man, aged 46, who suffered from occasional cough and sputum, but had no other symptoms. There was poor air entry into the chest, but repeated examination showed no signs suggestive of pulmonary tuberculosis. He was afebrile, and the sputum and X-ray examinations were negative.

Discussion on Results.

In the light of further research (see review of Breton's work in this issue), a possible fallacy in the above tests was caused by the length of

time elapsing between the withdrawal of blood from the patient and the performance of the test, for the blood in all cases was taken on a Tuesday or Wednesday morning, while the tests were performed on the following Friday morning, whereas Breton states that at most twenty-four hours should elapse between these periods. He has shown that the optic density varies greatly according to the freshness of the serum. A test which is positive after the first few hours may become negative after the serum has been kept for two to three days, whereas a negative test may become positive. In future the test will be performed for my patients within twenty-four hours of taking their blood.

All my patients were asked to abstain from food, except for a light breakfast, from the previous evening, as the partaking of food gives rise to a cloudy serum; but it is probable that medicaments may have been taken on the preceding days, which, according to Breton, may also give rise to inaccuracies.

The number of personal observations is too small to deduct generalities, but the results hitherto obtained certainly encourage the carrying out of further investigations.

Vernes in his original work insists on absolute accuracy of measurement of serum and of diluted resorcin, and for this purpose he has devised a rheometer syringe, which ensures the minutest accuracy. In a laboratory at 18° to 20° C., 0·6 c.c. of serum is placed in a phial measuring 13 by 60 millimetres, and 0·6 c.c. of 1·25 per cent. resorcin in doubly distilled water is added. This is immediately introduced into the photometer, and the degree of O.D. noted. In a tuberculous serum the density alters so rapidly that an immediate reading is essential. Two comparative readings are taken of each serum, and should be of accord if accurately done. The phials are then covered with rubber stoppers, and are allowed to stand in the room for four hours, when fresh readings are taken in the photometer. The difference between these two readings gives the required result.

If the instructions are adhered to in every detail, the human element is entirely eliminated from the test, and results obtained by different observers must tally.

With high readings Vernes has found fallacies in three series of cases only, and these, he says, can be readily eliminated. The fallacies arise with—(1) acute primary syphilitic chancre, (2) acute lobar pneumonia, (3) advanced cancer. Apart from these three conditions, he considers the test to be specific for tuberculosis. In the course of about three years Vernes has investigated some 6,000 sera, and states that, with the exceptions mentioned above, *all* showing an O.D. of 30 and over, proved to be cases of active tuberculosis (even when the sputum and X-ray examinations gave negative results). One exception,

in which the O.D. was unusually high (240), proved to be a case of pulmonary carcinoma.

Breton, as a result of his careful researches, believes that Vernes' test, while invaluable diagnostically, and more especially prognostically, yet shows errors in that it gives a high optic density in certain acute diseases, such as typhoid, diphtheria, rheumatic fever, pneumonia, acute streptococcic infections, etc. But during convalescence in these conditions the optic density rapidly falls to normal.

One of the most instructive phases of the test, as carried out by Vernes himself and by many of his followers, is the drawing up of a serological curve by taking the optic density of the serum of the same patient at different stages of the disease. The curves thus obtained accurately depict the progress of the disease, and have proved of considerable prognostic value. This line of research is more conveniently carried out in a residential institution than in connection with a dispensary practice.

Two other London institutions have recently installed the necessary apparatus for carrying out Vernes' photometric test, and there is every hope that further investigations may prove its value in the diagnosis and prognosis of tuberculous affections.

AN ASPECT OF THE WORK OF A TUBERCULOSIS OFFICER.

By ERNEST WARD,

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Our conception of tuberculosis is becoming modified, and it is likely that we shall come to regard as commonest the minor form of disease manifested among the highly resistant majority of the population, and consider as comparatively exceptional that form of pulmonary tuberculosis found among the poorly resistant minority, which today is discussed and legislated for as if it were the only form of the disease normally encountered.

Among the highly resistant majority, pulmonary tuberculosis usually appears clinically as a period of ill-health lasting from a few weeks to several months and accompanied by various symptoms, such as lassitude, malaise, cough, wasting, anorexia, and dyspepsia. Careful observation will often reveal in addition one or two physical signs suggestive of tuberculosis in the lungs, such as a few localized crepitations in the lungs, or areas of impaired resonance, usually at the apices and often inconstant. Of these cases I have written and given instances

elsewhere, and have termed the condition "minor tuberculosis." Such patients are encountered daily in private practice, and are met with frequently amongst "contacts" if the families of tuberculous persons are watched for several years.

In infants, children, and adolescents especially these periods of ill-health occur. The child is pale and losing weight (perhaps the most constant symptom); it may also cough and become listless, and slight pyrexia may be noted, which, in young children more especially, may be prolonged for months.

Experienced schoolmasters have told me that they recognize these periods of ill-health as common among those attending or in residence at boys' schools, and have often regarded them as a consequence of "growing too fast." One master told me that he had seen a boy's career utterly spoilt by parents and medical advisers taking the event too seriously, the boy being removed from school when in the experience of his master this condition of derangement would be likely to pass in a term, or at most two.

Are we right constantly to iterate, as seems the policy of those in charge of tuberculosis departments, that tuberculosis must be diagnosed *early* and the patient sent to a sanatorium? I think not.

One of the most approved, and certainly one of the most useful, innovations in tuberculosis work is the *preventorium for children*. To such a centre are sent debilitated children, called by some "pretuberculous," and these derive great benefit from their stay. The condition I have attempted to describe cannot be diagnosed definitely as tuberculous.

In my opinion the lines of our tuberculosis attack should be as follows:

1. Adequate isolation of known infective tuberculous cases and the search for unsuspected infective cases.

2. Preventorium treatment for a short period for children, adolescents, and *adults*, who are showing suspicious symptoms, without delaying until a final and mathematical diagnosis can be made.

The sanatorium still provides the best method of treating the tuberculosis of those with poor resistance. But the majority do not require this, although to send them there would enormously improve sanatorium statistics.

Apart from his all-important preventive work, a tuberculosis officer has to decide, not "Has this patient got tuberculosis?" but "Are this patient's symptoms due to tuberculosis?"—a much more important matter. Then to advise the best course of treatment. At one end of the scale, in patients slightly ill, the common error is to regard tuberculosis as something else; the other end of the scale, ill patients are considered tuberculous who are really suffering from a chronic catarrhal (usually pneumococcal) pulmonitis.

ASSOCIATIONS AND INSTITUTIONS.

BRITISH TUBERCULOSIS ORGANIZATIONS.

We are indebted to Dr. Ernest Ward for the following informing and serviceable communication:

Great Britain is well served by professional tuberculosis organizations, and every tuberculosis worker should make a point of joining one or more of them. Perhaps, however, they are insufficiently known, so an account of their activities may be considered timely.

1. *The Tuberculosis Association.*—This is not the same as the National Association for the Prevention of Tuberculosis,[1] but a purely professional organization resulting from the recent fusion of the old "Tuberculosis Society" and the "Society of Superintendents of Tuberculosis Institutions." Sir St. Clair Thomson is the President, and Dr. G. T. Hebert of St. Thomas's Hospital the Secretary. There are about 200 members, and the Society devotes its energies entirely to clinical and scientific subjects. Meetings, in the later afternoon and evening of the same day, are usually held quarterly in London at the House of the Royal Society of Medicine, but once yearly a provincial meeting is held, most often either at Oxford or Cambridge. This last meeting occupies three days; members take rooms in one of the colleges, and have every opportunity of getting to know each other.

2. *The Tuberculosis Group of the Society of Medical Officers of Health.*—Of this there are 170 members. The main work of the organization is transacted by a central committee on which are elected representatives of all the districts, by sub-groups or branches, or by the committee where sub-groups do not exist. (*a*) The Metropolitan sub-group sends 4; (*b*) the Midland sub-group 4; (*c*) the West of England sub-group 3; (*d*) the North-Western district 2 (elected by the North-Western Tuberculosis Society); (*e*) the North of England 1 (elected by the North of England Tuberculosis Society); (*f*) Wales 2 (elected by the Welsh National Memorial Association); (*g*) Scotland 1 (nominated by the Committee); (*h*) the South of England 2 (elected by the South of England Branch Society of Medical Officers of Health); (*i*) the Home Counties 3 (elected by the branch); (*j*) Yorkshire 2 (elected by the branch); (*k*) Eastern Counties 1 (nominated). And there are one or two co-opted members. The activities of the central body are entirely medico-political and preventive, and such subjects as salaries, various aspects of legislation that affect tuberculosis workers, etc., are considered. But the Midland sub-group, the Metropolitan and Western sub-groups, and the North of England Society, which is affiliated to this Society, hold clinical and scientific meetings in their

[1] The National Association for the Prevention of Tuberculosis has its headquarters at 1, Gordon Square, W.C., and its Educational Service was described by Dr. William Brand in the issue of this Journal for October, 1928, Vol. XXII., No. 4, p. 179.

areas. Of this organization, Dr. H. Vallow of Bradford, Yorks, is President, and Dr. Ernest Ward, Torquay Road, Paignton, Devon, is Secretary, and able to put members in touch with their local sub-group secretary.

3. *The North-Western Tuberculosis Society* has about 80 members, and devotes itself mainly to the consideration of scientific subjects. Dr. H. G. Trayer of Bagueley Sanatorium, Altrincham, Cheshire, is President, and Dr. G. Jessel of 10, Church Street, Leigh, Lancs, is Secretary.

4. *The North of England Tuberculosis Society* has 30 to 40 members. Dr. W. H. Dickinson of Newcastle-on-Tyne is President, and Dr. G. Hurrell of 91, New Bridge Street, Newcastle-on-Tyne, is Secretary.

5. *The Yorkshire Tuberculosis Society* has not met for some time. Dr. E. A. Wilson of 4, Belgrave Mount, Keighley, Yorks, is Secretary.

6. *The Scottish Tuberculosis Society* has 115 members and serves Scotland. Sir Robert Philip is President and Dr. W. Leslie Lyall of 6, Murrayfield Gardens, Edinburgh, is Secretary. The Society meets quarterly in Edinburgh, Glasgow, Aberdeen, or Dundee.

7. *The King Edward VII. Welsh National Memorial Association* is devoted to the prevention and abolition of tuberculosis in Wales, and has its headquarters at Westgate Street, Cardiff. Quarterly meetings for senior members of the medical staff are also held, at which clinical as well as administrative subjects are discussed. Three of the meetings are at Llandrindod Wells, but the winter meeting is a laboratory meeting at Cardiff, where advances in laboratory work are demonstrated and discussed.

8. *The Joint Tuberculosis Council* is the co-ordinating body for all tuberculosis work, and on it sit representatives of all tuberculosis organizations: (*a*) Tuberculosis Association, 6 members; (*b*) Tuberculosis Group, 3 members; (*c*) Council of Society of Medical Officers of Health, 1 member; (*d*) British Medical Association, 2 members; (*e*) North-Western Tuberculosis Society, 2 members; (*f*) North of England Tuberculosis Society, 1 member; (*g*) Yorkshire Tuberculosis Society, 1 member; (*h*) Welsh National Memorial Association, 2 members; (*i*) National Association for the Prevention of Tuberculosis, 2 members; (*j*) Ministry of Health, 1 member (an "observer"); (*k*) Ministry of Pensions, 1 member (also an "observer"). There are also 9 co-opted members, among whom are Sir Henry Gauvain, Dr. L. S. T. Burrell, Dr. Roodhouse Gloyne, Dr. Jane Walker, and Dr. Varrier Jones. Sir Henry Gauvain is Chairman, and Dr. Ernest Ward, Torquay Road, Paignton, Secretary, and Dr. J. Watt of King George V. Sanatorium, Godalming, Surrey, Treasurer. The objects of this organization may be thus stated: (1) To co-ordinate the work of the various organizations concerned in the study and treatment of tuberculosis. (2) To promote study and research. (3) To provide a committee of reference, representative of those interested in tuberculosis, which will consider questions referred to it by Government departments, local authorities, tuberculosis workers, societies, and others, and act as an advisory body in matters pertaining to tuberculosis. This body has a number of committees dealing with research work, the employment of tuberculous persons, notification, and kindred subjects relating to the tuberculosis movement.

NOTICES OF BOOKS.

THE VERNES SERUM-RESORCIN TEST.

Monsieur Arthur Vernes cannot be considered as the proverbial prophet in his own country—rather does he talk to deaf ears in this land of ours. Monsieur André Breton has therefore rendered a great service both to the originator of the photometric test and to others working in the same field by providing us with his carefully prepared and detailed study of the serum-resorcin test, as carried out under diverse conditions, either in the same individual at different stages of the disease, or comparatively in different individuals. The introduction of Vernes' resorcin test for tuberculosis followed on his perethynol test for syphilis and is described in detail in Fascicule 4 of *Travaux et Publications de l'Institut Prophylactique*. It consists briefly in withdrawing blood from the median basilic vein of a fasting person, mixing 0·6 c.c. of the clear serum with 0·6 c.c. of 1·25 per cent. resorcin and then measuring the variation in the optic density initially and after four hours' standing, by means of a special photometer. Readings below 15 signify the absence of active tuberculosis; readings above 30 show the presence of active tuberculosis; while those between 15 and 30 are in the doubtful area, being the more suspicious the nearer they approach 30. Vernes mentions as conditions leading to fallacies—advanced cancer, primary syphilitic chancre and acute lobar pneumonia, which frequently give a positive result. It was in order to verify and to amplify these results that Breton undertook his researches. His pamphlet aims at determining the comparative value of the Complement Fixation test and of Vernes' resorcin test in the diagnosis and prognosis of tuberculous affections.[1] He has collected available literature on both these tests from 1900 to 1928 and has himself carried out innumerable tests by both methods in cases of definite tuberculosis—pulmonary, osseous, glandular, etc., and also in patients suffering from acute or chronic non-tuberculous affections, and in the same patients at different stages of the disease as well as in healthy persons. His experiments are described in minute detail and are illustrated by charts. In reading Breton's work one cannot help being struck by the amenability of the French patient, who allows himself to be bled repeatedly in the interests of science. Breton's conclusions are as follows: 1. Vernes' resorcin test is, at present, the best laboratory method known in determining the diagnosis and the prognosis of tuberculous affections. 2. In performing the test, the minutest precautions must be observed: (*a*) it should be carried out within twenty-four hours of the withdrawal of blood from the median basilic vein; (*b*) the patient should have fasted for

[1] "Étude de la Réaction de Vernes a la Résorcine dans le Diagnostic et le Pronostic des Tuberculoses," par André Breton, Ancien Interne des Hôpitaux de Lille; Préparateur a l'Institut Pasteur. Pp. 152. Paris: Masson et Cie, 120, Boulevard Saint-Germain. 1928. Price 20 frs.

twenty-four hours and should have desisted from medicaments for seventy-two hours before the withdrawal of blood. 3. In pulmonary tuberculosis: (*a*) the diagnostic value of Vernes' test is limited by the fact that a positive result is also obtained in acute infectious conditions, in syphilis and in cancer; (*b*) the prognostic value is correct for a limited period only; (*c*) its value is incontestable in estimating the activity of the tuberculous lesion and in following its course; (*d*) it alone, among laboratory tests, permits of the drawing up of a serological curve, which depicts the general trend of the phases of the disease and the reactions towards recovery or aggravation due to treatment. 4. In surgical tuberculosis the test has little diagnostic value, although it is useful in demonstrating activity. 5. The Complement Fixation test does not give any indication of the varying degrees of activity of a tuberculous lesion. Breton's pamphlet should make an excellent starting-point for further intensive researches into Vernes' ingenious methods.

ROSE JORDAN, M.D., D.P.H.

LIPIODOL IN THE DIAGNOSIS OF THORACIC DISEASE.

Drs. F. G. Chandler and W. Burton Wood have presented within handy compass a tentative opinion of the possibilities and limitations of lipiodol in the diagnosis of thoracic disease.[1] With the indications laid down for the use of lipiodol most of those who are familiar with its possibilities will agree, as well as with the choice of the crico-thyroid membrane route as being in general the most satisfactory. Careful technique is, however, essential, less danger of lacerating the posterior wall of the trachea being possible with the short, straight trocar and cannula, advocated by the authors, than with the curved instrument of Armand-Delille. Preliminary tests for idiosyncrasy to iodine and cocaine are recommended, but anæsthetization of the trachea is often unnecessary. Other methods of introducing lipiodol are reviewed, and the dangers of its use are rightly stated as (*a*) iodine poisoning, (*b*) local injury, (*c*) broncho-pneumonia from dissemination of infection through the lung. In preliminary tuberculosis, especially with recent hæmoptysis, lipiodol is best avoided, and is not without danger in advanced bronchiectasis. On the whole, if adequate care be exercised, the risk of lipiodol injections are small, and the help in diagnosis—*e.g.*, of upper lobe bronchiectasis—is great. Half the book consists of well-reproduced skiagrams of the normal chest before and after lipiodol, in comparison with cases of foreign body in bronchus, lung carcinoma, bronchiectasis, and abscess of the lung. References are given to the recent literature on the subject. The book can cordially be commended as a practical exposition of the method, its limitations, diagnostic value, and therapeutic indications.

J. F. HALLS DALLY, M.D., M.R.C.P.

[1] "Lipiodol in the Diagnosis of Thoracic Disease." By F. G. Chandler, M.A., M.D., F.R.C.P., Physician, City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, London, and W. Burton Wood, M.A., M.D., M.R.C.P., Physician with charge of out-patients, City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E. Pp. 129, with 47 figs. London: Humphrey Milford, Oxford University Press, Amen Corner, Warwick Square, E.C. 4. 1928. Price 10s. 6d.

THE PATHOLOGY OF TUBERCULOSIS.

Professor Ranke was an eminent pathological anatomist. But every countryman of Kant and Hegel is a philosopher, and Ranke's work led him to evolve a theory of tuberculosis which is highly speculative. In studying the recently published selected writings of Ranke on the pathology of tuberculosis we cannot escape the impression that he unconsciously adapted the facts of scientific pathology to fit in with the tortuous phases of his metaphysical hypothesis, and are not surprised to find that his views have been strenuously opposed by such authorities as Baumgarten, Blumenberg, Huebschmann and Redeker.[1] In successive articles dealing with the morbid anatomy of tuberculosis Ranke traced the broad lines of development from the primary manifestation through generalization to localization, which he regarded as the correlation of the acquirement of immunity. Ranke had to admit, nevertheless, that there were numerous exceptions to his rule. For example, he classed tuberculosis into stages and then described a tertiary tuberculosis which developed on the site of healed primary tuberculosis. In this sequence Ranke's secondary stage is altogether omitted. Those who are familiar with the course of pulmonary tuberculosis in the child will find difficulty in accepting Ranke's dictum that no true primary focus exists in the disease, and the view that tuberculosis is a complex of various forms of allergy, susceptibility, immunity and individuality may satisfy the metaphysician, but as yet fails to convince the pathologist. The editors have done their work well and have spared no pains in the setting forth of Ranke's teaching on tuberculosis.

A. S. M.

ANTI-TUBERCULOSIS VACCINATION.

Three important papers have recently been communicated to the French Academy of Medicine which give information as to the progress of immunization by Professor Calmette's method.[2] In the first Professor Calmette brings his statistical information up to date. Up to November 1, 1928, 116,180 children have been vaccinated in France by BCG. Up to July 1, 1928, 3,607 children thus vaccinated were born of tuberculous mothers or have lived in contact with persons suffering from active tuberculosis. The tuberculosis mortality of children aged one month to a year, vaccinated during the four years considered, has been 1·5 per cent., and of children aged one to four years, 0·3 per cent. Professor Calmette has also obtained returns from 204 dispensaries which give observations on 1,989 children born of tuberculous mothers who were neither isolated nor vaccinated. These have shown a mortality from tuberculosis of 18 per cent. instead of 2·4 per cent. given by vaccinated children, and a general mortality of 24·3 per cent. instead

[1] "Ausgewählte Schriften zur Tuberkulosepathologie" ["Selected Writings on the Pathology of Tuberculosis"]. By K. E. Ranke, formerly Professor in the University of Munich. Edited and with an introduction by W. and M. Pagel. Pp. viii + 236, with 25 illustrations. Berlin: Julius Springer. 1928.

[2] "La Vaccination Préventive de la Tuberculose des enfants du premier âge par le BCG en France (1924-1928)." Communications faites à l'Académie de Médicine (Séance du 6 Novembre, 1928). ["The Prophylactic Vaccination of Children of Early Age against Tuberculosis by BCG in France (1924-1928)." Communications made to the Academy of Medicine (Session of 6 November, 1928)]. By MM. A. Calmette, Roux, Jules Renault, and Léon Bernard. Pp. 20. Paris: Masson et Cie, 120, Boulevard Saint-German. 1928.

of 10·4 per cent. given by the vaccinated. Professor Calmette claims that prophylactic vaccination by BCG has reduced by more than three-quarters the tuberculosis mortality and by more than one-half the general mortality. The difficulty of statistical investigation of BCG is that the figures are comparatively small and that careful control observations are required. The mortality rates given by Professor Calmette do not apply to all countries—*e.g.*, England and Wales, Denmark and Sweden. On these and on additional grounds Professor Calmette's statistics have been adversely criticized by Greenwood[1] and others. Further difficulty is met when the bacteriology of the subject is studied. BCG is a living vaccine (it is stated to be an attenuated strain of the bovine tubercle bacillus); it is therefore necessary to be certain that its administration does not give rise under any circumstances to the disease against which protection is desired. M. Renault in the second paper admits that a certain proportion of the vaccinated children have several months later presented tuberculous manifestations. He considers this is due not to production of tuberculosis by BCG but to the failure of this vaccination to protect from subsequent infection. Wallgren has cast doubts upon the amount of absorption of BCG likely to occur by an oral route, while Petroff's experimental results have failed to confirm Wilberg's conclusions as to the immunizing capacity of BCG in certain respects. These problems are engaging the attention of the Medical Research Council at the present time. The Section of Hygiene of the League of Nations contemplates an international investigation of BCG, details of which are given in the third paper by M. Léon Bernard. In the discussion at the Academy of Medicine some irritation was expressed by M. Roux that Professor Calmette's work had not been universally accepted on its own merits. So far as this country is concerned the criticisms made have assuredly not been actuated by any spirit of intolerance.[2] In so serious a matter as the administration of a living vaccine to human beings, confirmatory investigations even in regard to the claims of a distinguished authority on tuberculosis are necessarily required, and they have, indeed, been welcomed by Professor Calmette. If the investigations now proceeding establish the efficacy and innocuity of BCG, British medicine will be the first to acclaim the method. A. S. M.

"BCG" AND THE TUBERCULOUS VIRUS.

The Supplement of the *Annales de l'Institut Pasteur* is devoted to the consideration of Professor Calmette's BCG vaccine.[3] In a lengthy report presented to the international conference held at Paris in October, 1928, Professor Calmette reviews the whole subject, including the progress of the investigations in various countries of the world.[4] As regards Great Britain, he observes that at present the public health

[1] Greenwood, M.: "Professor Calmette's Statistical Study of BCG Vaccination," *Brit. Med. Journ.*, 1928, i., 793.

[2] An original article, "On Preventive Vaccination of the New-Born against Tuberculosis by B.C.G.," was contributed by Professor A. Calmette to this journal (October, 1928, Vol. XXII., No. 4, pp. 161-165).—EDITOR, *B. J. T.*

[3] *Annales de l'Institut Pasteur* (Supplément), 1928, Tome XLII, No. 12 *bis*, pp. 109.

[4] Calmette, A.: "La Vaccination Préventive de la Tuberculose par le BCG" (Bacille Calmette-Guérin) ["The Prophylactic Vaccination against Tuberculosis by BCG" (Bacillus Calmette-Guérin)], *ibid.*, pp. 58.

services have not arrived at any decision. For reasons previously stated in this JOURNAL, the question of BCG must be regarded in this country as still *sub judice*. The Supplement also contains an account of the resolutions adopted at the international conference, and five reports by different workers[1] on the experimental study of BCG. To those investigating BCG, or desirous of knowing the progress made, consultation of this Supplement is indispensable.

Two reprints from Professor Calmette have also been received, one written by himself,[2] the other in collaboration with J. Valtis and M. Lacomme,[3] which deal with the vexed questions of the filtrable elements of the tuberculous virus, their placental transmission, and the inheritance of tuberculosis. Professor Calmette contends that his bacteriological evidence supports the thesis, originally advanced in 1910 by Fontes of Rio de Janeiro, that virulent elements, invisible to the microscope and filtrable through porcelain candles, exist in greater or less quantity in tuberculous material. These filter-passing elements can only be detected by the inoculation of guinea-pigs; in these animals they produce either rapid death without apparent lesions or a slow enlargement of the lymphatic glands. It is understood that this question is engaging the attention of British workers who are studying the bacteriology of BCG. A. S. M.

LABORATORY AND EXPERIMENTAL METHODS IN TUBERCULOSIS.

Tuberculosis is an infective disease which is still enveloped in mystery, and innumerable means and measures have been introduced in the endeavour to unveil the intricacies and perplexities of the problem. Much has been accomplished by means of elaborate laboratory procedures and ingenious experimental methods, and new paths for investigations are constantly being introduced. Clinicians, bacteri-

[1] (1) Zeyland, M. J., and Piasecka-Zeyland, E.: "Sur la pénétration des bacilles à travers la paroi du tube digestif d'après les autopsies des enfants vaccinés au BCG par voie buccale" (Note Préliminaire) ["On the Passage of Bacilli through the Wall of the Digestive Tract as shown by Post-mortem Examinations of Infants Vaccinated with BCG by the Mouth" (Preliminary Communication)], *ibid.*, p. 61.

(2) Tzeknovitzer, M.: "Nouvelles Expériences sur le vaccin antituberculeux BCG" (Documents de la Commission Ukrainienne; Troisième Rapport) ["New Experiments on the Anti-tuberculosis Vaccine BCG" (Documents of the Ukraine Commission; Third Report)], *ibid.*, p. 67.

(3) Elbert, Gelberg, S., et Zoukerman, M.: "Sur les propriétés pathogènes et vaccinantes du BCG dans les expériences sur les cobayes et les moutons" (Première Note) ["On the Pathogenic and Vaccinal Properties of BCG in Experiments on Guinea-pigs and Sheep" (First Communication)], *ibid.*, p. 76.

(4) Mouquet, A.: "Note sur l'emploi de vaccin antituberculeux BCG à la ménagerie du Muséum National d'histoire naturelle de Paris" ["Note on the Use of Anti-tuberculosis Vaccine BCG in the Menagerie of the National Museum of Natural History at Paris"], *ibid.*, p. 102.

(5) Berthelot, A., et Amoureux, G.: "Sur les caractères physiques et chimiques du Bacille Tuberculeux Bilié BCG" ["On the Physical and Chemical Characteristics of the Biliary Tubercle Bacilli BCG"], *ibid.*, p. 107.

[2] Calmette, A.: "Les éléments filtrables du virus tuberculeux" ["The Filtrable Elements of the Virus of Tuberculosis"], reprint from *Bulletin de l'Institut Pasteur*, 1928, Tome XXVI., No. 20 (October 31), pp. 16.

[3] Calmette, A., Valtis, J., et Lacomme, M.: "Infection transplacentaire par l'ultra virus tuberculeux et hérédite Tuberculeuse" ["Transplacental Infection by the Invisible Virus of Tuberculosis and the Inheritance of Tuberculosis"], *Annales de l'Institut Pasteur*, 1928, Tome XLII., p. 1149.

ologists and other serious students of the tuberculosis problem will be grateful to Dr. H. Stuart Willis for his valuable and comprehensive handbook on approved laboratory and experimental methods now being employed in the investigation of tuberculosis.[1] The work occupies a unique position in the literature of tuberculosis and meets a real need. No laboratory and no research worker undertaking inquiries into tuberculosis and the investigation of individual tuberculous cases should be without this authoritative reference book. The author in his preface succinctly defines the purpose of his handbook: "It aims to describe the more important methods of laboratory diagnosis of tuberculosis and to consider some of the more significant procedures and principles involved in the experimental study of the infection"; and it is further stated that an endeavour has been made to provide a book which shall be of service to practising physicians, to public health officials and laboratory workers in general, and to medical students. The volume is composed of sixteen chapters, grouped in five parts, dealing with General Considerations of the Body Fluids and Excreta and giving descriptions of the several Secretions, Excretions, and Constituents of the Body in Tuberculosis; Bacteriological Diagnosis with descriptions of the various Methods for the Demonstration of the Tubercle Bacillus in Men and Animals; Diagnosis by Use of Tuberculin; Serological Diagnosis with descriptions of tuberculo-complement fixation and other serological tests; and Methods of Value in Studies of Tuberculosis Experimentally Produced as by the Inoculation of Animals with the Tubercle Bacillus and Induced Tuberculosis in Animals, together with notes on Histological Technique. Such an enumeration of contents will be sufficient to indicate the wide scope and comprehensiveness of this succinct, orderly and effectively presented collection of reliable and up-to-date information dealing with the investigation of tuberculosis. There is a serviceable chapter on the Equipment of a Tuberculosis Laboratory, and also an excellent bibliography, together with a satisfactory index of subjects and authors. Dr. A. K. Krause provides a stimulating introduction, and we make no apology for quoting the concluding paragraph, which contains excellent material for thought: "The diagnosis of tuberculosis remains so woefully imperfect to-day not because of paucity or inadequacy of method. Method we have in abundance—good method—method sufficient for an extraordinary high average of proficiency. We have clinical method enough and laboratory method enough for first-class attainments. Where we are lacking is in performance. What is wrong lies almost wholly in the great number of practitioners who are too busy or uninterested to secure satisfactory clinical histories; too indolent to use the stethoscope or too unpractised to employ it understandingly; too neglectful to keep at the microscopic examination of specimens, or the tuberculin testing of the skin; too ready to throw the entire burden of diagnosis on the X ray. Experience continues to teach that the thoroughly useful methods in the diagnosis of tuberculosis are not the difficult, the complicated, the cumbersome, the recondite ones—the ones

[1] "Laboratory Diagnosis and Experimental Methods in Tuberculosis." By Henry Stuart Willis, of the Johns Hopkins University and Hospital. With a chapter on Tuberculo-complement Fixation, by J. Stanley Woolley, of the Loomis Sanatorium, New York. With an Introduction by Allen K. Krause, of the Johns Hopkins Hospital. Pp. xxv+330, 25 figs., 243 bibliographical references, and index. London: Baillière, Tindall and Cox. 1928. Price, cloth, 16s.; Keratol, $4.25.

employable only by the 'Specialist.' It is safe to say that a fourth-year medical student can diagnose 80 per cent., and better, of all *diagnosable* cases of pulmonary tuberculosis through the employment of a few, a very few, simple and well-tried manœuvres—*if only he will use them.* It is to be hoped that this book by Dr. Willis will drive home this central theme; and that one important result will be to rid a respectable proportion of practitioners of an 'inferiority complex' which they seem to have developed when confronted with the necessity of a diagnosis in which tuberculosis may figure. The book will have been worth while if it succeeds in teaching that the laboratory diagnosis of the ordinary case of tuberculosis can be accomplished by simple methods in an ordinary physician's hands in an ordinary physician's office." We most thoroughly approve Dr. Krause's wise words.

THE TUBERCULOSIS PATIENT.

Tuberculosis is a disease in which the patient must loyally co-operate with his doctor and nurse, and friends and associates must assist by understanding and keeping the rules that regulate the fight. Many useful guide books have been written by medical advisers and patients who have been engaged in the tuberculosis campaign. Certainly the best handbook to place in the hands of a combatant is the work prepared by Dr. Pottenger of the Monrovia Sanatorium, California.[1] The author has had a long experience of sanatorium life in which he has enjoyable intimate association with tuberculous sufferers. His guide book is a sympathetically written and wise exposition of the problems of tuberculosis, and a reliable counsellor for the patient who desires knowledge and is ready to show wisdom in complying with conditions which will enable him to win back health. The book consists of forty-four short, crisp, encouraging, and informing chapters, in which practically all points connected with the prevention and treatment of tuberculosis are lucidly described in non-technical language. It is unfortunate that the work is not available at a price considerably less than half-a-guinea, for it is a manual which should be available not only for patients but for their friends, and for nurses, members of tuberculosis after-care committees, health visitors, and welfare workers. Perhaps the author will see his way to issue a condensed version at a popular price.

DEFORMITIES IN EARLY CHILDHOOD.

Miss M. F. Forrester-Brown has just published a handbook on the recognition and management of deformities in infancy and early childhood which is unique among orthopædic works, and should be in the hands of every practitioner dealing with children.[2] The author is an orthopædic surgeon who has had extensive experience in connection

[1] "Tuberculosis and How to Combat it: A Book for the Patient." By Francis M. Pottenger, A.M., M.D., LL.D., F.A.C.P., Medical Director, Monrovia Sanatorium, California Second Edition. Pp. 275. London: Henry Kimpton, 263, High Holborn, W.C. 1929. Price 10s. 6d.

[2] "Diagnosis and Treatment of Deformities in Infancy and Early Childhood." By M. F. Forrester-Brown, M.S., M.D. (Lond.), Surgeon, Bath, Somerset and Wilts Central Children's Orthopædic Hospital. With a Foreword by Sir Robert Jones, Bart., K.B.E., C.B., F.R.C.S. Pp. xii + 199, with 79 illustrations. London: Humphrey Milford, Oxford University Press, Amen House, Warwick Square, E.C. 4. 1928. Price 14s.

with the county schemes for dealing with cripple children in Somerset, Wilts, and Dorset, and is on the staff of the Bath, Somerset and Wilts Central Children's Orthopædic Hospital. Miss Forrester-Brown's book is intended to serve as a supplement to the larger text-books on orthopædics, and her object is defined in the preface as being "to stimulate general practitioners and those in charge of Obstetrical and Infant Welfare Clinics to search for signs of commencing deformity in the infants under their care, seeing that they have unique opportunities which are denied to the orthopædic surgeon, who rarely gets a case in the stage at which slight and gentle corrective measures can be expected to restore normal structure and function." The handbook, though of restricted size, is a pioneer production of the greatest value, and provides in an admirably arranged manner just the information and direction which the general medical adviser of today requires. A word of special praise must be given for the numerous carefully selected and instructive illustrations; the silhouette figs. and X-ray photographs are excellent. The material is effectively arranged in six sections according to regions of the body. References are made to tuberculous involvement of the spine and the chief joints of the body with directions for suitable treatment. The figures which represent cases of kyphos in tuberculosis of the spine and tuberculous disease of the hip-joint are particularly instructive. The book is a member of the series of Oxford Medical Publications and is admirably printed on art paper, thus allowing of perfect reproduction of the many excellent photographs which are a praiseworthy feature of an exceptionally valuable practical handbook.

MANUALS FOR MEDICAL ADVISERS AND WORKS OF REFERENCE.

Dr. E. C. B. Ibotson has written a suggestive book on morbid alliances and antagonisms in disease which merits the serious consideration of all doctors, and especially those dealing with the problem of tuberculosis.[1] The work treats of the nature and meaning of disease, heredity, environment, diatheses, partnerships and antagonisms of microbes, relationships of various infective diseases, animal parasites and their combinations and interrelations, influence of mind over body, interactions of endocrine disorders, forms of arthritis, and various neuroses and other derangements. A lengthy chapter is devoted to a study of tuberculosis and its relation to other diseases and diatheses, providing much material for thought and discussion. In the section on influenza and tuberculosis the following conclusions are expressed: (1) Influenza is a frequent antecedent to tuberculosis; (2) during an epidemic great care is needed not to mistake miliary tuberculosis for influenza; (3) old tuberculous cases should be screened as far as possible from influenza; (4) convalescent influenza patients with a family history of tuberculosis should be sent to the seaside or into the country and given cod-liver oil, malt extract, iron iodide, and a generous diet; (5) all milk given to acute influenza patients, if not already graded, should be sterilized. In regard to tuberculosis and alcoholism the

[1] "Partnerships, Combinations, and Antagonisms in Disease." By Edward C. B. Ibotson, M.D., B.S. (Lond.). Pp. 348, with 11 portrait-illustrations. Philadelphia: F. A. Davis Company, 1914-16, Cherry Street. 1929. Price $3.50.

author quotes Osler: "It was formerly thought that alcohol was in some way antagonistic to tuberculous disease . . . but the observations of late years indicate clearly that the reverse is the case and that chronic drinkers are more liable to both acute and chronic pulmonary tuberculosis. . . . It is probably altogether a case of altered tissue soil; the alcohol lowers the vitality and enables the bacilli more readily to develop and grow." There are interesting sections on the relations of tuberculosis to syphilis, leprosy, typhoid fever, cardio-vascular affections, cancer, mental derangements, endocrine disorders, diabetes, and malaria. The chapter closes with a consideration of the influence of the immune white man on the non-immune savage. Dr. Ibotson's unique work has manifestly entailed wide reading and extensive investigation; it is a remarkable collection of clinical data, pathological hypotheses, and ingenious ideas, and is certainly one which will especially appeal to the general practitioner.

Dr. Bethel Solomons, Master of the Rotunda Hospital, is responsible for the latest edition of the long-approved treatise on midwifery known as "Tweedy's Practical Obstetrics," the first edition of which was issued in 1908.[1] The new edition is one of the most up-to-date of the many handbooks on this subject now available for the student and practitioner, and it can be enthusiastically commended and that without reservations. The volume embodies the principles and methods of treatment approved at the Dublin Rotunda Hospital. Part I. provides an excellent introduction on the reproductive organs and embryology, the latter being the work of Professor Bronté Gatenby; Part II. deals with normal pregnancy, labour, and the puerperium, and includes a chapter on antenatal care; Parts III. and IV. are devoted to detailed studies of abnormal pregnancy; Part V. contains an account of the abnormal puerperium; Part VI. describes obstetric operations; Part VII. is a study of the infant; and in Part VIII. are assembled valuable appendices. The work is generously illustrated, and in a manner which will prove of the greatest service to the student. The illustrated section on X rays in obstetrics is an acceptable novelty. We venture to quote Dr. Solomons' paragraphs on tuberculosis in the section dealing with the care of the new-born infant: "It is of the greatest importance to remember that tuberculosis is conveyable through milk. It is interesting to note that Dr. Still's observations show that 29 per cent. of tuberculosis in children are due to alimentary infection. This figure is only a very little higher than Professor Findlay's figures at Glasgow. It is the duty of all doctors to educate their patients, and so strive to bring about a state where it is possible to obtain certified milk. By this we mean that the cows should be tuberculin tested every six months, and that bacterial examination should show a *maximum* count of only 30,000 bacteria per c.c. Statistics taken by Dr. Still show that tuberculosis is now recognized in very young children. In the second year it is particularly evident, there being comparatively few cases the first six months, double this number in the second six months, and double this again from the twelfth to the twenty-fourth month, after which the curve drops." Dr. Solomons'

[1] "Tweedy's Practical Obstetrics." Edited and largely rewritten by Bethel Solomons, M.D., F.R.C.P.I., M.R.I.A., Master Rotunda Hospital. Sixth edition. Pp. xxii + 759. London: Humphrey Milford, Oxford University Press, Amen House, Warwick Square, E.C. 4. 1928. Price 25s.

work is worthily produced in a manner we are accustomed to expect in the Oxford Medical Publications.

Dr. Raymond Tournay's practical manual on the modern treatment of varicose veins deserves to be known in this country as well as in France, for it furnishes an admirable guide to the now approved method of dealing with this troublesome lesion of veins by the intravenous injection of agents which safely produce a thrombosed and sclerosed condition in the offending vessel.[1] The "method of Sicard" is of service for tuberculous and other cases handicapped in their exercises and open-air activities by varicose veins in the lower extremities. Dr. Tournay describes all points in the anatomy, physiology, and pathology of varices, discusses their causation and symptomatology, and deals in detail with treatment both ancient and modern. The greater part of the manual is devoted to a consideration of technique.

Dr. Gregg's little manual on tropical nursing meets a real need, but the price at which it is issued is too high if it is to have an extensive circulation among those for whom it has been specially written.[2] The work is based on lectures delivered to nurses at the Hospital for Tropical Diseases, London, and articles which have been published in *The Nursing Mirror*. The author's aim has been to provide nurses and others entering on professional service and activities abroad with a simple, lucid, and practical guide in as far as possible non-technical language. The manual opens with an account of personal hygiene in the tropics, and then follow succinct accounts of the chief diseases met with abroad. There is an excellent section on technical procedures such as blood examinations, blood transfusion, bowel lavage, test meals, intramuscular and intravenous injections, and the like. Dr. F. W. O'Connor has provided a chapter on the care of the eyes. There is a serviceable glossary and a good index. No reference is made to the investigation and management of cases of tuberculosis in the tropics.

The last volume issued by the American Climatological and Clinical Association contains several valuable articles dealing with tuberculosis:[3] "Climate in the Treatment of Pulmonary Tuberculosis," by Dr. J. A. Miller; "The Duration of Life in Pulmonary Tuberculosis with Cavity," by Dr. H. L. Barnes and Lena R. P. Barnes; "The Use of a Qualitative Diagnosis of Pulmonary Tuberculosis," by Dr. J. B. Amberson, Jr.; "The Incidence of Tuberculous Infection in School Children." All these communications are of considerable importance, and the volume contains many others of exceptional interest and value.

The Ministry of Agriculture and Fisheries has issued a volume

[1] "Les Varices Pratique des Injections Sclérosantes." Par Raymond Tournay avec Préface du Docteur Raoul Baudet, Chirurgien honoraire des Hôpitaux, Avant-Propos du Docteur J. A. Sicard, Professeur à la Faculté de Médecine. Pp. 264, avec 22 figures. Paris: Éditions Médicales, N. Maloine, 27, Rue de l'École-de-Médecine. 1929. Prix 20 frs.

[2] "Tropical Nursing: A Handbook for Nurses and Others going Abroad." By A. L. Gregg, M.A., M.D., M.Ch., B.A.O. (Dublin), D.T.M. and H. (Lond.), L.M. (Rotunda Hospital); Lecturer to Nurses at, and late Medical Superintendent of, the Hospital for Tropical Diseases, London. With a Foreword by the Hon. Sir Arthur Stanley, G.B.E., C.B., M.V.O. Pp. xi+199, with 10 figures. London: Cassell and Co., Ltd. 1929. Price 6s.

[3] "Transactions of the American Climatological and Clinical Association for the Year 1928." Volume XLIV. Pp. xxix+205. Boston, Mass.: Robert Burlen and Son, 156, Pearl Street. 1928.

consisting of a collection of pamphlets on the cultivation of vegetables. These will be of special service to amateurs as well as professional gardeners and allotment holders.[1] We commend the publication to the notice of those who, in connection with tuberculosis sanatoria, colonies, and settlements, are arranging for agricultural and horticultural activities.

Dr. F. L. Hoffman, of the Prudential Insurance Company of America, has favoured us with a copy of his volume on the malaria problem.[2] It consists of a reprint of papers written between 1916 and the present day, and admirably summarizes the work which has been accomplished by members of the American National Malaria Committee and other experts. Malaria, like tuberculosis, is a medico-sociological problem which has far-reaching national and international relationships and enormous economic consequences.

South America and the attractions of life and work amongst the peoples of Latin-America are drawing many to the great countries of the south-west. Doctors advising health-seekers, tourists in search of pleasure, and all others interested in South America, should secure a copy of the new handbook, which claims to present "South America in a nutshell."[3] It is a remarkably comprehensive reference book, as well as being an indispensable guide for travellers, full of statistical and other data, with authoritative information of all kinds. As frontispiece there is an admirable coloured map.

The 1929 issue of "The British Journal Photographic Almanac," truly designated "The Big Book of Photography," should be in the possession of all photographers, both amateur and professional.[4] It is a marvellous production, and is published at a price which is within the reach of everyone. It is an indispensable guide and companion for all who are interested in the progress of photography. The illustrations are beautiful examples of photographic art, and the advertisements are a remarkable feature. Among the contents, special attention should be directed to the editor's illuminating article on "Photography and the Criminal." Photography is a scientific and artistic interest and pastime which is open to many tuberculous patients and others who are obliged to follow open-air pursuits. To such we would specially commend a study of the Photographic Almanac, which is so ably edited by Mr. George E. Brown.

Messrs. John Wright and Sons, of Bristol, have rendered British surgery a notable service in adding to their excellent series of standard

[1] "Collected Leaflets on the Cultivation of Vegetables." Pp. 136, with chart and Illustrations. Sectional vol. No. 12. London: Ministry of Agriculture and Fisheries, 10, Whitehall Place, S.W. 1. 1928. Price 1s. 3d., post free.

[2] "Malarial Problems." By Frederick L. Hoffman, LL.D., Consulting Statistician Prudential Insurance Company, Member National Malaria Committee, etc. Pp. 207. Wellesley Hills, Mass., U.S.A.: The Prudential Press. 1928.

[3] "The South American Handbook, 1929: A Guide to the Countries and Resources of Latin-America, inclusive of South and Central America, Mexico, and Cuba." Edited by J. A. Hunter. Pp. lxxx+746, with maps. London: South American Publications, Ltd., Atlantic House, Moorgate, E.C. 2. 1929. Price 2s. 6d.; post free 3s.

[4] "The British Journal Photographic Almanac and Photographer's Daily Companion, with which is incorporated the Year Book of Photography and Amateur's Guide and the Photographic Annual." Edited by George E. Brown, F.I.C., Hon. F.R.P.S. Pp. 799, elaborately illustrated. London: Henry Greenwood and Co., Ltd., 24, Wellington Street, Strand, W.C. 1929. Price 2s.

volumes an authoritative work on surgical pathology. The authors are Messrs. C. P. G. Wakeley and St. J. D. Buxton, surgical members of the staff of King's College Hospital, London.[1] The aim of the work is to provide such an account of the pathological side of surgery as may help senior students and practitioners in their clinical work. It is, in fact, an admirable companion for the pathological museum as well as a scientific introduction to surgical pathology. Such a work will be of the greatest assistance to those preparing for the ordeals of the examination room, but it will be equally appreciated by surgeons who desire to base their practice on a sure foundation of pathological fact. There are seventy-five chapters, each admirably arranged and effectively presented by the use of varying styles and sizes of types. The illustrations are numerous and instructive; a number are fine examples of colour-printing. Some good X-ray photographs are included. There are excellent descriptions of tuberculous lesions of bones and joints, genito-urinary tract, larynx, glands, peritoneum, and other parts of the body liable to tuberculosis. A whole chapter is devoted to the pathology of tuberculosis and an account of the spread of tuberculosis within the body. Publishers and authors are to be congratulated on the production of a work which is likely to occupy a permanent place among the best of our books on surgical pathology.

Among the volumes of Messrs. Lewis's much approved "Practical Series" of Manuals for Medical Students and Practitioners the text-book on Hygiene and Public Health by Drs. Parkes and Kenwood has for long been a popular member. A revised edition has just been issued.[2] Dr. Louis C. Parkes has relinquished all responsibilities, and Professor Kenwood in association with Professor Kerr has undertaken the preparation of the new issue of this standard work. Needless to say the revision has been most thoroughly carried out in the hands of such expert and long-experienced leaders and teachers. It is an ideal handbook for all students preparing for a Public Health Diploma, and all medical officers engaged in the Public Health Services. The work is composed of fourteen chapters which deal with Water, the Collection, Removal and Disposals of Excretal and other Refuse, Air and Ventilation, Warming and Lighting, Soils and Building Sites and the Dwelling, Climate and Meteorology, Food Beverages and Condiments, Personal Hygiene, Infection and Communicable Diseases and their Prevention, Isolation Hospitals, Disinfection and the Disposal of the Dead, Maternity and Child Welfare, School Hygiene, Industrial and Marine Hygiene, and Vital Statistics. Prominence is of course given to tuberculosis and the means whereby it is spread and may be prevented. References are given to Tuberculosis Regulations, the Report of the

[1] "Surgical Pathology," by Cecil P. G. Wakeley, F.R.C.S. (Eng.), F.R.S. (Edin.), Hunterian Professor Royal College of Surgeons of England, Surgeon King's College Hospital, London, and St. J. D. Buxton, M.B., B.S. (Lond.), F.R.C.S. (Eng.), Surgeon and Orthopædic Surgeon, King's College Hospital, London. Pp. xvi+904, with 392 illustrations (50 fully coloured). Bristol: John Wright and Sons, Ltd. London: Simpkin Marshall, Ltd. 1929. Price 45s. net.

[2] "Hygiene and Public Health" (Parkes and Kenwood). Revised by Henry R Kenwood, C.M.G., M.B., F.R.S. (Edin.), D.P.H. (Lond.), Emeritus Professor of Hygiene and Public Health in the University of London, etc., and Harold Kerr, O.B.E., M.A. (Dunelm), M.D. (Edin), D.P.H. (Camb.), Professor of Hygiene and Public Health in the University of Durham, etc. Eighth edition. Pp. xii+823, with 2 plates and 91 other illustrations. London: H. K. Lewis and Co., Ltd. 1929. Price 21s.

Royal Commission of 1895, the Work of After-Care Committees, Dispensaries, Sanatoria, Colonies, and other agencies for dealing with tuberculosis cases. In the chapter on Communicable Disease, a section of twenty-three pages is devoted to tuberculosis, providing an admirable general survey. Many will doubtless wish that the volume could have been more fully illustrated, but that was manifestly impossible without exceeding the size of an already large and heavy volume.

Dr. Ethel Cassie has written a thoroughly practical guide for all engaged in maternity and child welfare work.[1] It presents a fairly complete picture of the administrative side of this service, and affords directions as to the early detection and prevention of disease in young subjects. In a series of twenty-nine chapters all aspects of the subject are effectively dealt with. There is a useful section on tuberculosis, and a good chapter on "Heliotherapy: Natural and Artificial." The book is attractively got up, and is strongly to be commended to the notice of those who desire a clear, reliable, and helpful exposition of questions relating to child care and infant hygiene.

"The Year Book of the Universities of the Empire," edited by T. S. Sterling, M.A. (London: G. Bell and Sons, Ltd. Pp. xiv + 852. 1929. Price 7s. 6d.), has been published for the Universities Bureau of the British Empire, 50, Russell Square, W.C. 1, and is a complete, reliable, up-to-date directory to the seventy university centres existing in the British Empire. This volume contains the essentials of calendars which taken together would extend over 50,000 pages. It affords information regarding the history, regulations, and practice of each university, and gives particulars as to staff, equipment, degrees and diplomas, residential accommodation, extra-mural work, publications, etc., together with references to events of outstanding interest which have occurred during the past academic year. All interested in higher education in this country and in Britain overseas should possess a copy of this monumental reference book.

Medical advisers and all interested in health resorts and holiday centres, particularly in the South and West of England, should secure copies of "Holiday Haunts," issued by the Great Western Railway, and "Hints for Holidays," published by the Southern Railway. These impressive and admirably illustrated voluminous guides contain an immense amount of interesting information, and much practical data, in a form which will be of service to health and holiday seekers, and especially to doctors who have to give advice regarding health stations in this country.

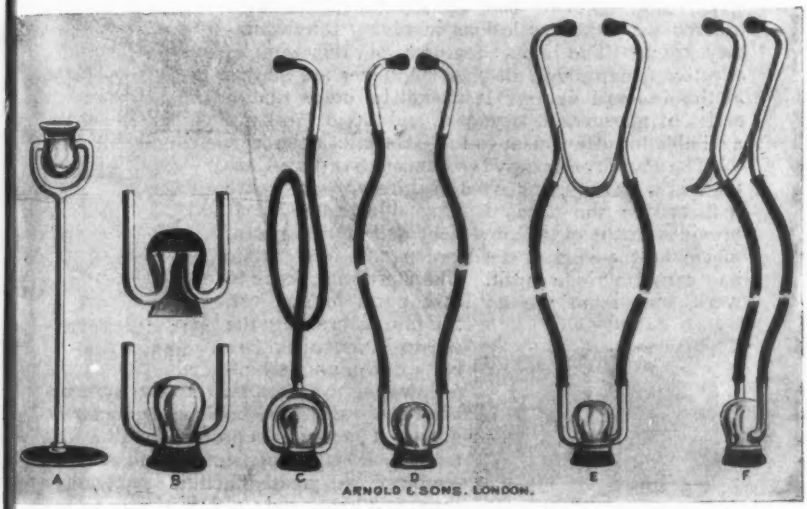
Under the title of "Come Abroad with Us" (price 2s. 6d.) the Southern Railway has provided a charming volume which may well have a prominent place in a doctor's waiting-room. The text has been written by E. P. Leigh-Bennett, and there are fifteen beautiful full-page coloured pictures by Leonard Richmond, R.O.I., R.B.A., of Continental health and holiday centres. Before settling on a visit abroad this informing and attractive album should be consulted.

[1] "Maternity and Child Welfare: A Textbook for Public Health Workers." By Ethel Cassie, M.D., Ch.B., D.P.H. (Edin.), Assistant Medical Officer of Health for Maternity and Child Welfare, and Medical Superintendent of the Carnegie Infant Welfare Institute, Birmingham. Pp. viii + 228, with 16 illustrations. London: H. K. Lewis and Co., Ltd. 1929. Price 8s. 6d.

PREPARATIONS AND APPLIANCES.

THE "PHONOPHORE" STETHOSCOPE.

AUSCULTATION provides one of the most valuable means for the investigation of chest cases, but for the conduct of this form of physical examination in clinical work a reliable stethoscope is essential. We have recently had an opportunity of testing the "PHONOPHORE" STETHOSCOPE, the chief features of which are shown in the accompanying figure.[1] It is claimed that the construction of this stethoscope secures



THE "PHONOPHORE" STETHOSCOPE.

a considerably increased volume of sound. The well-shaped chest-piece serves as a collector, and sounds are equally distributed through the two tubes which connect it with the examiner's ears. Doctors who are somewhat hard of hearing claim that this stethoscope has been of real assistance. The present "Phonophore" is a greatly improved form of the original pattern, which was introduced some years ago, and deserves the attention of all interested in stethoscopy. The instrument is of first-class workmanship throughout. The price complete with folding spring is 16s. 6d.

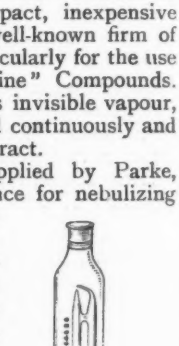
[1] Full particulars regarding the "Phonophore" Stethoscope can be obtained from the makers, John Bell and Croyden, incorporating Arnold and Sons, 50-52, Wigmore Street, W. 1.

HYGIENIC APPLIANCES AND THERAPEUTIC PREPARATIONS.

In the treatment of pulmonary affections by inhalation, especially catarrhal conditions now so prevalent, the AËRISER will be found of great service.[1] It is a small, compact, inexpensive form of vapourizer provided by the well-known firm of Oppenheimer Son and Co., Ltd., particularly for the use of their valuable series of "Neboline" Compounds. It converts them into a voluminous invisible vapour, so enabling medicament to be inhaled continuously and carried to all parts of the respiratory tract.

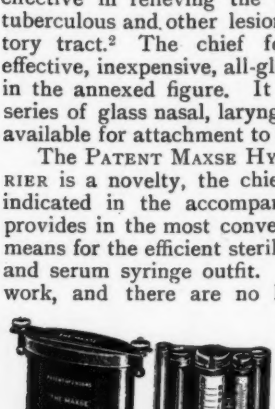
THE AËRISER.

The GLASEPTIC NEBULIZER, supplied by Parke, Davis and Co., is a reliable appliance for nebulizing or atomizing medicated liquids, which are often so effective in relieving the distress associated with tuberculous and other lesions involving the respiratory tract.[2] The chief features of this simple, effective, inexpensive, all-glass nebulizer are shown in the annexed figure. It should be noted that a series of glass nasal, laryngeal, and throat tubes are available for attachment to the Glaseptic Nebulizer.



THE GLASEPTIC NEBULIZER.

The PATENT MAXSE HYPODERMIC SYRINGE CARRIER is a novelty, the chief features of which are indicated in the accompanying illustrations.[3] It provides in the most convenient and compact form means for the efficient sterilization of a hypodermic and serum syringe outfit. The sterilizer is easy to work, and there are no loose parts to get lost. Simply unscrewing the mounts, turning the bolts down, and raising or lowering the plate bearing the syringes is all that requires to be done by doctor or nurse. The carrier is provided with a foot mount. This strong, simple, and reliable sterilizer will greatly facilitate work, save time, and lessen risks of infection.



THE PATENT MAXSE HYPODERMIC SYRINGE CARRIER.

In the field of organotherapy spleen substance, either in a desiccated form or as an extract, has been employed with apparent advantage in a number of morbid conditions. In cases of tuberculosis this new agent would seem to be of real service, and particularly where anæmia, asthenia, wasting, and other nutritional derangements are marked. The exact action is difficult to explain. It may be due in some measure to the stimulation of the calcium metabolism. Others have suggested

[1] Particulars regarding the Aëriser and the "Neboline" compounds can be obtained from Oppenheimer Son and Co. Ltd., 179, Queen Victoria Street, E.C. 4.

[2] Particulars regarding the Parke, Davis and Co.'s Glaseptic Nebulizers and Sprays can be obtained on application to Parke, Davis and Co., 50, Beak Street, Regent Street, W. 1.

[3] The Patent Maxse Hypodermic Syringe Carrier is supplied by the Security Druggists Sundries Co. (M. M. Edelsten), 23, Greencroft Gardens, South Hampstead, N.W. 6. Price complete, 19s. 6d.; case with plate only, 9s. 6d., postage extra.

that the good results attained are due to the splenic hormones. A number of continental papers have testified to the benefit of spleen preparations in tuberculosis. A recent paper published in this country by Professor Otto Fliegel of Vienna on "Spleen Diet for Tuberculosis of the Joints" (*Medical Press and Circular*, January 9, 1929) shows that the spleen "absorbs the corpuscular components, or easily precipitated materials, in the blood, modifying them, and under certain circumstances storing them, and that it plays an important part in the chemical changes that iron and fat undergo." Reference is also made to Schroeder's investigations, which go to show that the spleen is of value as a protective organ against tuberculosis infection. Professor Fliegel has found a spleen diet of considerable service in cases of surgical tuberculosis. Systematic experiments are now being carried out in France, Austria, Germany, and America with a view to testing the therapeutic value of the spleen, either in its raw state or as an extract, in various forms of tuberculosis. These experiments appear in the main to be based on the assumption that the good results obtained by irradiation of the spleen in tuberculous subjects are due to an increase in the amount of spleen hormone. It would appear that the same effects can be obtained by the administration of splenic extracts rich in the splenic hormones instead of resorting to irradiation, which is not always harmless and cannot be available for all cases. A reliable spleen extract is now available under the name of "SPLENEX."[1] It is a pure extract of the spleen of the calf, and is prepared under strictly controlled scientifically directed conditions. It is estimated that 4 ounces of "Splenex" corresponds to 2½ pounds of spleen substance. It is to be hoped that this new preparation will be thoroughly tested in this country.

KALZANA is a special brand of calcium-sodium lactate tablets, being a chemical combination of calcium lactate and sodium lactate in the form of a double salt.[2] Now that the value of calcium is being realized for tuberculous subjects, tuberculously disposed children, and other cases in which metabolism is deranged, this effective preparation of calcium is being extensively used. We have employed it with much advantage in the management of tuberculous and other delicate children. It seems to be of considerable service in cases of rickets and other morbid conditions of bone and also as a preventive of dental caries. For pregnant women Kalzana is often beneficial. Actinotherapists approve its administration in cases undergoing a course of light treatment. For the prevention of chilblains Kalzana has won a far-reaching popularity. In all cases where symptoms of calcium deficiency are met with Kalzana deserves a trial.

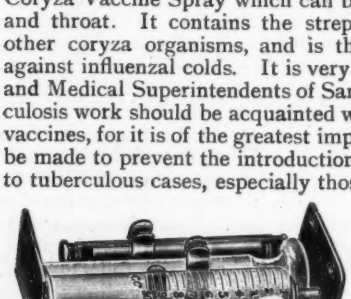
The experience gained in the recent extensive epidemics of influenza and infectious catarrhs seems to have gone far to establish the value of vaccine therapy. Among reliable preparations now available special attention should be directed to the vaccines prepared by Genatosan, Ltd.[3]

[1] Full particulars and a specimen of "Splenex" will be sent to all medical advisers engaged in tuberculosis work on application to Plasmon, Ltd., 66a, Farringdon Street, E.C. 4.

[2] Specimens and particulars of Kalzana can be obtained on application to Therapeutic Products, Ltd., Napier House, 24-27, High Holborn, W.C. 1.

[3] Particulars regarding the series of Detoxicated Vaccines together with special bulletins on "Detoxicated and Ordinary Vaccines" and "Local Immunity Products" will be supplied to medical advisers on application to Genatosan, Ltd., Loughborough, Leicestershire.

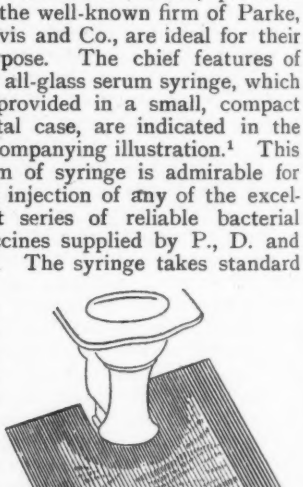
The Detoxicated Anti-Coryza Vaccine is a particularly excellent one, and can be employed in acute cases with fever and for hypersensitive patients, giving rise to little or no general reaction. Massive doses can be administered without producing malaise. In addition to various well-known organisms each c.c. contains 5,000 millions of the new streptococcus isolated from the blood of influenza cases. To meet the wishes of those who consider a slight reaction of value ordinary Anti-Coryza Vaccine is available. There is also an Anti-Coryza Vaccine Spray which can be used for local application to nose and throat. It contains the streptococci of influenza in addition to other coryza organisms, and is therefore a serviceable prophylactic against influenzal colds. It is very desirable that Tuberculosis Officers and Medical Superintendents of Sanatoria and others engaged in tuberculosis work should be acquainted with the prophylactic virtues of these vaccines, for it is of the greatest importance that every endeavour should be made to prevent the introduction of influenzal and coryzal infections to tuberculous cases, especially those in which the lungs are involved.



THE GLASEPTIC ALL-GLASS SERUM SYRINGE IN CASE.

The GLASEPTIC HYPODERMIC AND SERUM SYRINGES, provided by the well-known firm of Parke, Davis and Co., are ideal for their purpose. The chief features of the all-glass serum syringe, which is provided in a small, compact metal case, are indicated in the accompanying illustration.[1] This form of syringe is admirable for the injection of any of the excellent series of reliable bacterial vaccines supplied by P., D. and Co. The syringe takes standard needles, and also interchangeable aseptic needles of all sizes. No doctor's emergency case can be considered equipped unless it contains a P., D. and Co.'s Glaseptic All-Glass Syringe, suited for all hypodermic and intra-muscular injections.

The RUBBER LAVATORY PEDESTAL MAT is a sanitary equipment, the value of which will be evident from the adjacent illustration.[2] It consists of durable, ribbed rubber which is readily washed, and has a pleasing central marble design in colours, and is so shaped that it fits around the base of the w.c. pedestal. The size is 2 feet by 2 feet, with thickness of $\frac{1}{8}$ inch. The price is 7s. 6d.

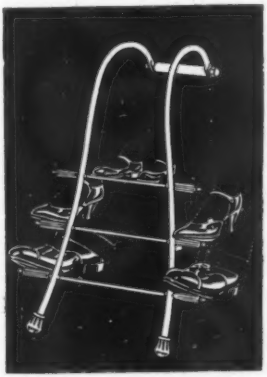


THE RUBBER LAVATORY PEDESTAL MAT.

[1] Particulars regarding the Parke, Davis and Co.'s hypodermic serum and other syringes can be obtained on application to Parke, Davis and Co., 50, Beak Street, Regent Street, W. 1.

[2] The Rubber Lavatory Pedestal Mat is made by Bank Bridge Works, Ltd., Bank Street, Clayton, Manchester.

Under the general designation of Hampson's Patents there have been introduced a series of hygienic and other novelties which only require to be known to be approved and used in hospitals, sanatoria, open-air schools, nursing homes, and doubtless in connection with the daily life of healthy folk in ordinary houses.[1] The HYGIENIC FOOT-REST FOR LAVATORIES is a novelty which provides means for an approximation to a more correct physiological attitude than is usually possible under existing modern conditions. The chief features are indicated in the accompanying figure. It is said to be of service in preventing the development of hernia, and certainly in many subjects of chronic constipation with lax abdominal walls it should be helpful. It seems probable that it would be appreciated by patients with severe chronic cough. The foot-rest (price 17s. 6d.) is strongly constructed of metal, finished in white enamel, and is washable. The "THIRD-HAND" THUMB MAGNIFIER is a little magnifying lens set in a frame which can be attached to the thumb (price 3s. post free). It is a novelty which doctors, nurses, and scientific workers will appreciate. Philatelists and needle-women speak enthusiastically of this practical device for aiding vision. The ECLIPSE EYE SHADE is a simple protective appliance for the eyes. It is a light metal plate which can be fitted to spectacles or frames of glasses, and shields the eyes from the glare of the sun or artificial light. Patients undergoing open-air treatment will doubtless value this novel contrivance (price 2s. 6d.).



THE HYGIENIC FOOT-REST FOR LAVATORIES.

THE HOPOL FUMIGATING LAMP is a small, compact, simple, pocket contrivance, portable, economical and efficient, which provides for the disinfection by formalin vapour of rooms occupied by tuberculous and other infectious cases.[2] They have been employed extensively by the tuberculosis section of the Public Health Department of the City of Manchester. The price of each lamp complete in metal case is 1s. 6d. post free, or per gross £7 4s. carriage paid.

THE SCHICK REPEATING RAZOR is a novelty which will interest doctors and patients, travellers and sportsmen, and others who appreciate comfort, convenience, and effective service in conducting shaving.[3] There are twenty blades contained in the handle of each Schick. The appliance is ingeniously combined and skilfully constructed. A push and a pull and literally the razor is ready for use, and there are no parts to be taken to pieces and cleansed and replaced. This ingenious razor is very popular in America, and is likely to find much favour in this country. The price complete is 27s. 6d.

[1] Particulars regarding the series of hygienic and other novelties supplied by Hampson's Patents can be obtained on application to 3, Hills Place, Oxford Street, W. 1.

[2] The Hopol Fumigating Lamp is manufactured by Hopol Ltd., Zan Works, Wheelock, Sandbach, Cheshire.

[3] The Schick Repeating Razor can be obtained from Doubleday Products Ltd., Morley House, 314-322, Regent Street, W. 1.

ELIXIR RIBES NIG. CO. and ELIXIR TERPO-HEROIN CO. are two of the excellent series of elixirs prepared by Duncan Flockhart and Co.[1] These are both admirable in the treatment of pulmonary tuberculosis and other cases in which cough and expectoration are troublesome symptoms. The first preparation is made from a pure syrup of black currants, and each drachm contains heroin hydrochlor. $\frac{1}{24}$ gr., menthol $\frac{1}{100}$ gr., with ipecac. and euphorbiæ, etc. The second is a valuable sedative, and in each drachm there is terpin hydrate $\frac{1}{2}$ gr., heroin hydrochlor. $\frac{1}{20}$ gr., together with other materials, which give a delightful flavour to this elegant pharmaceutical preparation.

ANGIOLYMPHE has been strongly advocated by Dr. Rous for the treatment of tuberculosis.[2] It gives rise to no violent reaction, but is said to produce a distinct sense of betterment after a few injections. It is supplied in boxes, each of which contains six ampoules.

CYTO-SOL, manufactured in the well-known Laboratoires Corbière in Paris, is advocated as a preparation of service in the treatment of tuberculosis.[3] It is a combination of pure anhydrous sodium cacodylate with strychnine sulphate dissolved in an isotonic saline. It is put up in 2 c.c. and 5 c.c. ampoules ready for intramuscular or subcutaneous injections in a course of intensive strychno-arsenical medication.

SOLGANAL is a new gold preparation which is being advocated in the treatment of tuberculosis, leprosy, and other infections.[4] It has been synthetically produced by Dr. A. Feldt, who introduced Krysolgan. It is an alkaline salt of a complex acid of gold, and seems to be less toxic than Krysolgan and other gold preparations.

IODINE-MEDOL has a wide field for service. It is a non-toxic, non-irritant antiseptic and disinfectant ointment, prepared from oxygenated hydrocarbons in combination with 1 per cent. iodine and 5 per cent. hycol, a coal-tar derivative. These oxygenated hydrocarbons are emulsionated in such a manner as to render them capable of admixture with the glandular secretions, by which means dispersion by absorption (osmosis) in the underlying tissues is rapidly obtained. For local application in cases of septic troubles and skin diseases of bacterial or parasitic invasion, and also for the relief of burns, this new preparation has proved of service. It has been much appreciated by workers in industrial undertakings.[5]

DR. JACOBSON'S SOLUTION, known as "Benzyl Cinnamic Ester," is attracting attention as a serviceable preparation in the treatment of tuberculosis.[6] It is said to contain the benzyl and cinnamic radicals

[1] Particulars and prices of the above-mentioned Elixirs can be obtained from Duncan Flockhart and Co., Edinburgh, and 155-157, Farringdon Road, E.C. 1.

[2] Full particulars regarding the nature and action of Angiolymphe can be obtained direct from Charles Zimmermann and Co. (Chemicals) Ltd., 9 and 10, St. Mary-at-Hill, E.C. 3.

[3] Particulars of Cyto-Sol (Corbière) can be obtained from the Anglo-French Drug Co., 238A, Gray's Inn Road, W.C. 1.

[4] Particulars regarding Solganal, and a reprint of Dr. Hacker's article on "The Treatment of Pulmonary Tuberculosis by Solganal," can be obtained on application to Schering Ltd., 3, Lloyd's Avenue, E.C. 3.

[5] Iodine-Medol is supplied in metallic tubes by Pearson's Antiseptic Co. Ltd., 61, Mark Lane, E.C. 3.

[6] Dr. Jacobson's Solution is now being supplied in ampoules, a dozen in each case, by Boots Pure Drug Co., Ltd., Nottingham, from whom full particulars can be obtained.

characteristic of benzyl cinnamic ester in the form of benzyl alcohol and ethyl cinnamate, and these are presented in a sterile solution of olive oil in 1 c.c. vials ready for intra-muscular injection. This preparation has been extensively employed in Paris and other continental centres, and has been found useful in cases of lupus, genito-urinary tuberculosis, and more recently in pulmonary tuberculosis. Dr. Jacobson contends that when introduced into the body away from the seat of the local tuberculous lesion benefit results, congestion diminishing, ulceration becoming arrested, and progressive fibrosis limiting and replacing the tuberculous focus, with at the same time diminution and disappearance of troublesome symptoms and a general betterment in the patient's condition become evident.

AZOTYL is a preparation which is claimed to be hyperactive by ultra-violet irradiation according to the technique of Stennbock. It is announced as a synthetic substance of organo-vegetable composition, containing lipoids of the spleen and liver, cholesterin, lecithin, camphor, and certain vegetable essences, and having antitoxic, bacteriolytic, and anti-hæmolytic properties. Azotyl is best administered by subcutaneous or intra-muscular injections, and is available in ampoules. Azotyl is also supplied in pill form.[1]

OSTELIN is a valuable preparation for cases which cannot tolerate cod-liver oil. It is a non-fatty, tasteless, physiologically standardized concentrate of vitamin D, and is particularly valuable for children. It is now available in four easily assimilable forms—Ostelin in glycerine, Ostomalt (extract of malt with Ostelin and orange juice), Ostelin tablets, each containing soluble calcium glycero phosphate, and Ostelin emulsion. Ostelin can also be obtained in ampoules and in association with parathyroid.[2]

CALCIUM is now being administered in various forms to tuberculous cases. A particularly convenient and effective preparation for consumptives and other sufferers from tuberculosis is the new Crookes emulsion of cod-liver oil with calcium.[3] We have used this with great advantage.

GLAXO has for long found favour as a reliable dried milk for infants and young children. A NEW GLAXO has now been introduced.[4] It is a prescriptive humanized dried milk to which vitamin D has been added in the form of Ostelin, and provides an ideal preparation for expectant and nursing mothers, being easily assimilated and insuring effective calcium absorption; it is popularly known as "SUNSHINE GLAXO."

PLASMONA is a new food product which promises to be of much value in the management of tuberculous and tuberculously disposed cases and subjects of dietetic and other wasting diseases. It contains Plasmon milk protein, vitamins A, B, D, E, anti-anæmic liver extract, lipoids, etc., and combined in a palatable and readily assimilable form.[5]

[1] Particulars regarding Azotyl can be obtained on application to Continental Laboratories, Ltd., 17, Lower Belgrave Street, S.W. 1.

[2] Full particulars regarding Ostelin preparations can be obtained on application to Glaxo, 56, Osnaburgh Street, N.W. 1.

[3] Specimens and particulars of the Crookes emulsion with calcium can be obtained on application to The Crookes Laboratories, 22, Chenies Street, Tottenham Court Road, W.C. 1.

[4] Particulars and specimens of New Glaxo can be obtained on application to Glaxo, Glaxo House, 56, Osnaburgh Street, N.W. 1.

[5] Specimens and particulars of Plasmona can be obtained on application to Plasmon, Ltd., Farringdon Street, E.C. 4.

"ICHTHYOL" has proved of considerable service not only for local application in the care of various cutaneous disorders, but also as an agent for internal administration in a number of diseases.[1] It is also now available in certain forms for toilet purposes. Under the designation of "Albichthon" a new sulphur preparation has been introduced, and can be counted as a serviceable adjunct in "Ichthyol" medication. These preparations will be found of value in dealing with some tuberculous subjects.

Midgley's MEDICATED and TOILET SOAPS have for long been increasing in favour not only for use as hygienic agents, but as medicinal applications in various cutaneous disorders. The soaps are of the highest quality, and by the skilful incorporation of certain medicaments valuable therapeutic preparations are now available in desirable forms.[2]

Men in open-air establishments as well as elsewhere will find the CRISTALINE ANTISEPTIC BLOCK a valuable local preparation for use after shaving.[3] The STYPTIC PENCIL is also a serviceable adjunct as providing a ready means for arresting bleeding from small cuts.

THE THEO-PIGMY LAMP.

The THEO-PIGMY LAMP[4] is a practical novelty which every doctor and nurse will find serviceable, and which patients and most citizens will appreciate. It is a reliable, durable, inexpensive electric lamp, the current for which is three volts, easily generated from an enclosed dynamo by hand pressure. This helpful companion, 3¼ inches by 2 inches and weighing only 5 ounces, readily fits into a man's pocket or a lady's handbag. The casing of the lamp is made of special vulcanite material which insures lightness in weight, quietness in action, comfort in handling, and gives a handsome appearance. The price is 16s., and 18s. abroad, or in artistic case, suitable for presentation or gift, complete with spare bulb, 20s., and 22s. 6d. abroad, insurance and post free.

[1] Full particulars regarding "Ichthyol" and "Albichthon" can be obtained from Ichthyol Company, Ltd., 18, Adam Street, Adelphi, W.C. 2.

[2] The proprietors of Midgley's Soaps have just issued a "Midgley's Medisoap Blotter," which contains full particulars of the medicated soaps. A copy will be sent to any medical practitioner on application to Charles Midgley, Ltd, 325, City Road, Manchester.

[3] The Cristaline Antiseptic Block and the Styptic Pencil are supplied by most hairdressers and chemists or direct from the Cristaline Shaving Block Company, 1-5, Holland Street, Goose Gate, Nottingham.

[4] The Theo-Pigmy Lamp can be obtained direct from Theo and Co., Ltd., 32, Tarleton Street, Liverpool, England.

THE OUTLOOK.

THE PASSING OF A TUBERCULOSIS OFFICER.

JOHN LOGAN STEWART, M.A., M.B., Ch.B., D.P.H.,
Consultant Tuberculosis Officer, Lancashire County Council.

ON February 20, 1929, there occurred in Manchester, from pneumonia, the most unexpected and untimely death of Dr. J. Logan Stewart, Consultant Tuberculosis Officer to the Lancashire County Council. He was forty-nine years of age. Dr. Stewart graduated at Glasgow, taking the degrees of M.A. (in 1900), and M.B., Ch.B. (in 1905), and obtained his D.P.H. from Cambridge. Dr. Stewart entered the service of the Lancashire County Council as Medical Inspector of Schools in 1909, and in July, 1913, he was appointed Consultant Tuberculosis Officer for the south-east portion of the county, at present containing a population of 370,000 persons, with a chief dispensary at Ashton-under-Lyne and five branch dispensaries in neighbouring towns. Dr. Stewart was the first member of the tuberculosis medical staff of the Lancashire County Council to undertake his own X-ray work, and this work he developed to the highest degree of efficiency. He contributed several chapters on X-ray work for the annual report on the tuberculosis work in Lancashire, and an article entitled "The Value of X-Ray Work in a Tuberculosis Dispensary" appeared in *Tubercle* in 1927. He also carried out most important pioneer work in regard to the treatment of tuberculosis by artificial light at centres established in tuberculosis dispensaries. After two years' experimental work at the Ashton-under-Lyne Tuberculosis Dispensary he proved that artificial light treatment was particularly valuable for the treatment of lupus and adenitis with abscess formation and skin involvement. In the past twelve months Dr. Stewart had devoted much time to the question of tuberculosis and silicosis, upon which he contributed an article to the *British Journal of Tuberculosis* in January last. He was engaged in further research on silicosis at the time of his death. In the last ten or fifteen years the tuberculosis service in the North of England has lost two exceptionally gifted clinical tuberculosis officers—the late Dr. W. C. Rivers, District Tuberculosis Officer of the West Riding County Council, and now Dr. John Logan Stewart. Dr. Stewart was a typical Lowland Scot: austere yet kind, bent but not broken by the death of his wife some three years ago, ever engrossed in his work, possessed with a sure judgment and an entirely unselfish nature; all these qualities made him loved and respected by each of his colleagues, patients, and the doctors who so frequently consulted him. Visitors from many lands went to Ashton-under-Lyne; all returned impressed with Dr. Stewart's work. But this it was which made him stand out above the crowd. Woven into every part of his being and controlling his unceasing work was a fierce yet sane sympathy with the sufferer from tuberculosis. For such sufferers he lived, and for them he died.

G. LISSANT COX.

We have to deplore the recent loss through death of several leaders in the tuberculosis movement: Professor Clemens F. von Pirquet, of Vienna, whose name will ever be associated with a well-known tuberculin test; Sir Hector Mackenzie, long connected with the Brompton Hospital; Dr. Clive Riviere, of the City of London Hospital for Diseases of the Chest, Victoria Park, and author of "The Early Diagnosis of Tubercle" and "Artificial Pneumothorax"; and Dr. John Laird, author of "Tuberculosis: Its Prevention and Treatment."

LIGHT THERAPY.

Sir George Newman, in his last Annual Report, devotes a chapter to treatment by natural sunlight and artificial light. During the past three years the Ministry of Health has given encouragement to the provision of actinotherapy by local authorities under their tuberculosis and child-welfare schemes. The Board of Education have also sanctioned the establishment of artificial light installations at a number of school clinics under local education authorities. The Report insists on the importance of skilled medical supervision, not only because of the risks that may arise through unskilled technique and inadequate protection, but also because the utmost care is required in the selection of patients for this treatment and their subsequent observation. "In a number of instances it has been found that some patients, especially children, are constitutionally unfitted for the treatment, as indicated by the occurrence of headaches, tachycardia, nausea, vomiting, fever and malaise. . . . Serious results may also follow the application of artificial light in cases of tuberculosis, and in unskilled hands it is quite a possibility that the treatment may light up a previously quiescent tuberculous condition. Care is also needed in grading the dosage of ultra-violet light, according to the response made by the individual patient." The Report, while pointing out that many of the approved centres for treatment by ultra-violet rays have been established at tuberculosis dispensaries, hospitals, and sanatoria, definitely states that the reports received from such centres reveal that considerable care and discrimination have to be exercised in the selection of tuberculosis cases for this treatment. Indubitably the best results appear to be obtained in the healing of *Lupus vulgaris*. Certain cases of tuberculous adenitis respond favourably, but only when the patient's general powers are already marshalled for combating the disease. With regard to abdominal tuberculosis, the results are said to be variable and dependent upon the general metabolic response of the individual patient. In some cases of tuberculosis of bones and joints ultra-violet therapy appears to be advantageous, but the opinion is expressed that it cannot replace recognized modern orthopædic measures. As to pulmonary tuberculosis, the following view is dogmatically expressed: "The value of ultra-violet therapy in cases of pulmonary tuberculosis appears to be doubtful, and its application may be fraught with serious risk to the patient." It is good to know that medical officers of artificial light centres are to be asked to formulate their own reports and to submit a general statement on the progress of the work annually. Points calling for special attention are enumerated. Many readers of this Journal are deeply interested in actinotherapy, especially as applied to tuberculous and tuberculously disposed patients. We therefore quote Sir George

Newman's conclusions, which effectively illustrate the importance of caution in making use of this comparatively new therapeutic agent and the necessity for an extension of scientifically directed observations and the formulation of reliable reports: "It is found that the practice of workers varies considerably as regards type of lamp selected, dosage and duration of course of treatment. Various opinions are expressed, not only as to the efficacy of artificial light treatment in different forms of disease, but also as to its therapeutic value generally. It is clear that the time is not ripe for any co-ordinated classification of results, and also, as several of the workers emphasize, time must be allowed to elapse to evaluate results which appear to be successful at the moment. Particularly is this applicable to many cases of *Lupus vulgaris* and healed sinuses in surgical tuberculosis where superficial healing may occur and for a time mask more deeply seated foci of disease. It appears to be true that artificial light therapy is a weapon that advanced civilization has provided to diminish by some degrees its own defects. Increasing urbanization, the smoke-pall over cities, darkness and dirt bring diseases in their train which the natural defences of the body, starved of sunlight, morning air and exercise, cope with but indifferently. In such cases artificial sunlight may stimulate the natural forces of the body and overcome disease; it seems unlikely, however, to prove more than an adjunct to established methods of treatment, while from the preventive aspect adequate food and housing, open-air exercise, fresh air and sunlight, if obtainable, are preferable to indoor sessions around an arc-lamp. Several of the workers lay stress on the importance of utilizing natural sunlight as far as possible in the treatment of tuberculosis. Few ill-effects have been reported through the use of artificial light. To this statement there is one exception. It seems clear that there is serious risk of causing extension of disease in cases of active febrile pulmonary tuberculosis, and this condition should contra-indicate treatment by artificial heliotherapy. The best results by the method appear to have been obtained in rickets, *Lupus vulgaris*, and surgical tuberculosis."

The recently issued report of the Medical Research Council in its section on "Treatment by Artificial Light" expresses views which are certain to be challenged, and must receive serious consideration. It is claimed that "great sums of private and public money are being expended upon it [artificial ultra-violet light as distinguished from sunlight], and large new commercial and professional interests are involved." While admitting that actinotherapy is of service in lupus and certain other tuberculous lesions, it is urged that "it seems fair to suspect that in much of the present advocacy of light treatment the results *post hoc* are accepted as *propter hoc*, and beyond that common fallacy there lie all the possibilities of faith-healing and suggestion, as well as those of simultaneous but unnoticed changes in the personal hygiene of those treated." Much discussion will be aroused by some of the statements made in the report, unaccompanied by detailed evidence, regarding the comparative uselessness of ultra violet light in rickets and other nutritional disorders. We quote the following as an example: "The last report of the chief medical officer of the Ministry of Health shows that the results collected from artificial light centres provided by local authorities exhibit much variation of opinion . . .; but no objective evidence is provided that results have been achieved that could not have been far more cheaply gained by proper food; and

if that be so, it is obvious that exercise and fresh air are greatly preferable to indoor sessions around a lamp." This remarkable section closes with the following two sentences, which of necessity call for rejoinders: "It would seem to be the duty of those who take the responsibility of prescribing light treatment not only to secure that its known dangers shall be avoided, but also to find and announce evidence of its benefits that do not come only from strong commercial advocacy on the one hand and popular credulity on the other. It would seem also to be the special duty of hospitals and schools or other clinics expending large sums of public money upon artificial light to use part of the expenditure to demonstrate by properly controlled trials their justification for spending more."[1]

The Ministry of Health has recently issued a new and up-to-date tabular statement regarding the cost of treatment of tuberculous cases in residential institutions.[2] Statistical data are provided regarding 186 institutions in England and Wales.

The Ministry of Health has published a memorandum by Captain W. Dalrymple-Champneys[3] on accommodation for sick boys in certain English Public Schools. It contains valuable data and practical recommendations which will be invaluable to school medical officers.

The Secretary for Scotland appointed January 1 last as the day on which, under the Reorganization of Offices (Scotland) Act, 1928, the Scottish Board of Health and the Board of Agriculture for Scotland ceased to exist, and their powers and duties transferred to a Department of Health for Scotland and a Department of Agriculture for Scotland respectively.

The Home Secretary has appointed a committee to advise as to the medical arrangements which could be made for the diagnosis of silicosis (including silicosis accompanied by tuberculosis) in cases of claims arising under the Workmen's Compensation Act, and for carrying out any periodic or other medical examinations of workers which may be prescribed for any industry or process involving risk of silicosis under the Factory and Workshop Act, 1901, or any other enactment. The members of the committee are Mr. J. C. Bridge, F.R.C.S., L.R.C.P. (chairman), Mr. F. J. H. Coutts, C.B., M.D., and Professor Arthur Hall, M.D., F.R.C.P. The secretary of the committee is Mr. E. Field of the Home Office, to whom all communications on the subject should be addressed.

The last report of the Children's Branch of the Home Office, bearing the names of Mr. S. W. Harris and Dr. Arthur H. Norris, contains statistics of interest relating to tuberculosis among children

[1] "Committee of the Privy Council for Medical Research: Report of the Medical Research Council for the Year 1927-1928." Pp. 165. London: H.M. Stationery Office. 1929. Price 3s.

[2] "Treatment of Tuberculosis—Costs at Residential Institutions." Memo. 122 B/T. Pp. 21. London: Ministry of Health. November, 1928. A copy of this document, it is stated, should be in the hands of the Medical Officer of Health, the Financial Officer of the authority, and the Medical Officer of each residential institution for the treatment of tuberculosis belonging to the authority. Copies can be supplied on application to the Ministry of Health.

[3] "On the Accommodation for the Sick provided at certain Public Schools for Boys in England." By Captain W. Dalrymple-Champneys, M.A., B.M., M.R.C.P. Pp. 35. London: H.M. Stationery Office. 1928. Price 1s. net.

and adolescents in Home Office schools.[1] A table is given indicating the mortality per 1,000 from all forms of tuberculosis among committed children as compared with the mortality from tuberculosis among children between ten and fifteen years of age in England and Wales from 1913 to 1927. In 1916 the death-rate from tuberculosis in Home Office schools was 2·5 per 1,000 as compared with a death-rate of 0·68 from tuberculosis among children generally. In 1927 the death-rate from tuberculosis was nil. From 1925 and 1927 thirty-one cases were notified (excluding two boys who were in an advanced tuberculous state on admission, and died within three months of committal), of which ten were the subjects of pulmonary tuberculosis and twenty-one non-pulmonary forms of the disease. It is encouraging to read that, while "at one time responsible for 40 per cent. of the instances in which children died whilst under training, tuberculosis has of late been taking a comparatively minor place as a cause of disease and of death in Home Office schools." The report admirably indicates the improvement which during recent years has been accomplished in the schools under the Home Office.

Dr. Lissant Cox, as Chief Tuberculosis Officer of the Lancashire County Council, has issued as his last official report an elaborate volume, entitled "Prevention and Treatment of Tuberculosis in the Administrative County of Lancaster," which contains a valuable communication on "The Principles Underlying a Scheme of Anti-Tuberculosis Measures in any County," together with much other matter of exceptional interest.

We have received from the Social, Pathological, and Prophylactic Section of the Ukrainian State Tuberculosis Institute an impressive volume of 385 pages in Russian. Fortunately summaries are provided in English, German, and French. The work is issued under the supervision of Professor J. J. Fineshmidt, Director of the Ukrainian State Tuberculosis Institute, Dr. N. S. Morosovsky, Superintendent of the Social, Pathological, and Prophylactic Section of the Institute, and Dr. L. D. Ulianow, the deputy-superintendent. The volume would seem to be a second issue of collective studies on "Tuberculosis in the Town and Country," and deals with the results of an inquiry as to the prevalence of tuberculosis in certain rural districts of the Ukraine. Seven typical villages were selected, and 7,394 persons were medically examined, comprising 96·3 per cent. of the inhabitants. Other medico-sociological investigations were undertaken at the same time. The volume contains a series of signed communications consisting of reports. It would seem that pulmonary tuberculosis is found in 3·7 per cent. of the whole population, or 5·5 per cent. over fourteen years of age. The average percentage of children infected with tuberculosis is given as 5·7. The work is provided with plans, charts, and illustrations, and was published by "Naoutschnaya Mysl" at Charkoff in 1928.

The Edinburgh Medical Journal constituted its March issue a tuberculosis number.[2] Among many notable communications special reference should be made to a masterly lecture on "Tuberculosis of the

[1] "Home Office: Fourth Report on the Work of the Children's Branch." Pp. v+125, with tables and illustrations. London: H.M. Stationery Office. 1928. Price 1s.

[2] *The Edinburgh Medical Journal* is published by Oliver and Boyd, Edinburgh, price 4s.; annual subscription, 40s.

Spinal Column" by Professor John Fraser. There are also records of demonstrations and papers given in connection with the recent visit of Canadian tuberculosis doctors.

Building is a comparatively new monthly periodical, which appeals to architects, builders, engineers, and all interested in building materials and estate management.[1] It is artistically produced, admirably illustrated, and contains records of new buildings and various practical notes. Many of our readers will like to know of this authoritative journal.

The British Museum (Natural History), South Kensington, has just issued a series of seven packets of picture postcards of British trees (price 6d. each). Each contains four cards in colour or monochrome, and illustrate the chief features in summer and winter of the alder, wild apple, ash, beech, sweet chestnut, horse chestnut, and sycamore. These cards will be much appreciated in open-air schools, and by all teachers and scholars interested in nature study.

A chair of clinical tuberculosis and diseases of the respiratory tract has been established at Rome, with Professor E. Morelli as the first occupant.

In connection with the University of Liverpool there has been founded a Fellowship in the Faculty of Medicine for research in tuberculosis in children. The Fellowship has been endowed by the gift of £2,000 by the trustees of the late Mrs. Ridgway.

Under the auspices of the Faculté de Médecine and the Association Alsacienne et Lorraine contre la Tuberculose a practical course on the Radiological Diagnosis of Pulmonary Tuberculosis and Disease of the Respiratory Tract will be held at Strasbourg, June 24-30. Particulars from Dr. E. Vaucher, 8, Quai Finkwiller, Strasbourg.

The first municipal sun-lounge in Great Britain was opened at Torquay on February 20 by Professor Leonard Hill, F.R.S., Director of the Department of Applied Physiology and Hygiene at the National Institute for Medical Research.

At a meeting of the Royal Society of Arts on Wednesday, April 17, at 8 p.m., at the Society's House in John Street, Adelphi, Mr. F. E. Lamplough, M.A., will read a paper on the properties and applications of vitaglass illustrated by demonstrations. Professor Leonard Hill, F.R.S., will take the chair.

There will be an important Tuberculosis Section in connection with the forthcoming Public Health Congress at Zurich, May 15-20. Particulars from Royal Institute of Public Health, 37, Russell Square, W.C. 1.

An International Congress on Light Treatment will be held in Paris, July 22-27. Particulars from Dr. W. Kerr Russell, 12, Park Crescent, Portland Place, W. 1.

The Fifteenth Annual Conference of the National Association for the Prevention of Tuberculosis, 1, Gordon Square, W.C. 1, will be held at Newcastle-upon-Tyne, October 10-12.

[1] *Building* is published at 33, Tothill Street, Westminster, S.W. 1. Single copies, 1s.; annual subscription, post free, 12s.